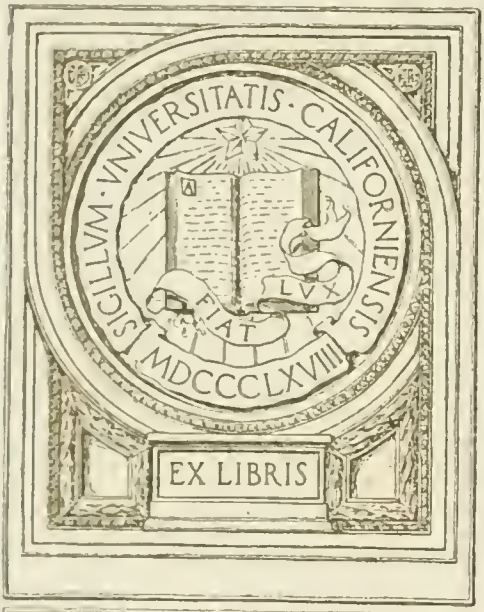
UNIVERSITY OF CALIFORNIA
AT LOS ANGELES



Edinburgh Edition

CANADA

AND ITS PROVINCES

IN TWENTY-TWO VOLUMES
AND INDEX

VOLUME X

THE DOMINION
INDUSTRIAL EXPANSION

PART II

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T. & A. Constable

LORD STRATHCONA AND MOUNT ROYAL

From a photograph by Lafayette

CANADA
AND ITS PROVINCES
A HISTORY OF THE CANADIAN PEOPLE AND THEIR INSTITUTIONS BY ONE HUNDRED ASSOCIATES

GENERAL EDITORS: ADAM SHORTT
AND ARTHUR G. DOUGHTY

VOLUME X

THE DOMINION
INDUSTRIAL EXPANSION

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NATIONAL HIGHWAYS OVERLAND

RAILWAYS OF CA

ONTARIO
QUEBEC
Temiskami Forest Reserve
Algonquin Park
PARRY SOUND
MUSKOKA
LAKE HURON
Georgian Bay
LAKE ONTARIO
LAKE ERIE
NEW YORK
PENNSYLVANIA
Toronto
Hamilton
Ottawa
Montreal
Buffalo
Rochester
Syracuse
Albany
Detroit
Cleveland
Scranton
Pittston
Wilkesbarre
Binghamton
Elmira
Ithaca
Catskill
Kingston
Newburg
Paterson
Jersey City
Newark
Staten
Adirondack
Mount Marcy
Lake Nipissing
North Bay
Sudbury
Sault Ste Marie
Mattawa
Pembroke
Renfrew
Belleville
Kingston
Brockville
Prescott
Cornwall
Watertown
Utica
Albany
Troy
Schenectady
Amsterdam
Johnstown
Gloversville
Saratoga
Lake George
Lake Champlain
Burlington
Rutland
Bennington
Springfield
Hartford
New Haven
Bridgeport
Stamford
Yonkers
New York
Jersey City
Newark
Elizabeth
Staten Island
Long Island
Philadelphia
Trenton
Camden
Atlantic City
Wilmington
Baltimore
Washington
Harrisburg
Reading
Lancaster
Allentown
Bethlehem
Easton
Pottsville
Williamsport
Erie
Meadville
Titusville
Oil City
Franklin
Warren
Jamestown
Dunkirk
Buffalo
Niagara Falls
Lockport
Batavia
Geneva
Canandaigua
Auburn
Oswego
Watertown
Ogdensburg
Massena
Cornwall
Montreal
Ottawa
Pembroke
Renfrew
Arnprior
Carleton Place
Smiths Falls
Brockville
Gananoque
Kingston
Belleville
Trenton
Peterborough
Lindsay
Orillia
Barrie
Collingwood
Owen Sound
Southampton
Kincardine
Goderich
Sarnia
Port Huron
Detroit
Windsor
Chatham
London
Woodstock
Brantford
Hamilton
Toronto
Oshawa
Whitby
Port Hope
Cobourg
Belleville
Napanee
Kingston
Gananoque
Brockville
Prescott
Cornwall
Massena
Ogdensburg
Watertown
Oswego
Fulton
Syracuse
Auburn
Ithaca
Elmira
Corning
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Dunkirk
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Meadville
Titusville
Oil City
Franklin
Warren
Bradford
Olean
Salamanca
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Lockport
Batavia
Geneva
Canandaigua
Rochester
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Port Hope
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Belleville
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Kingston

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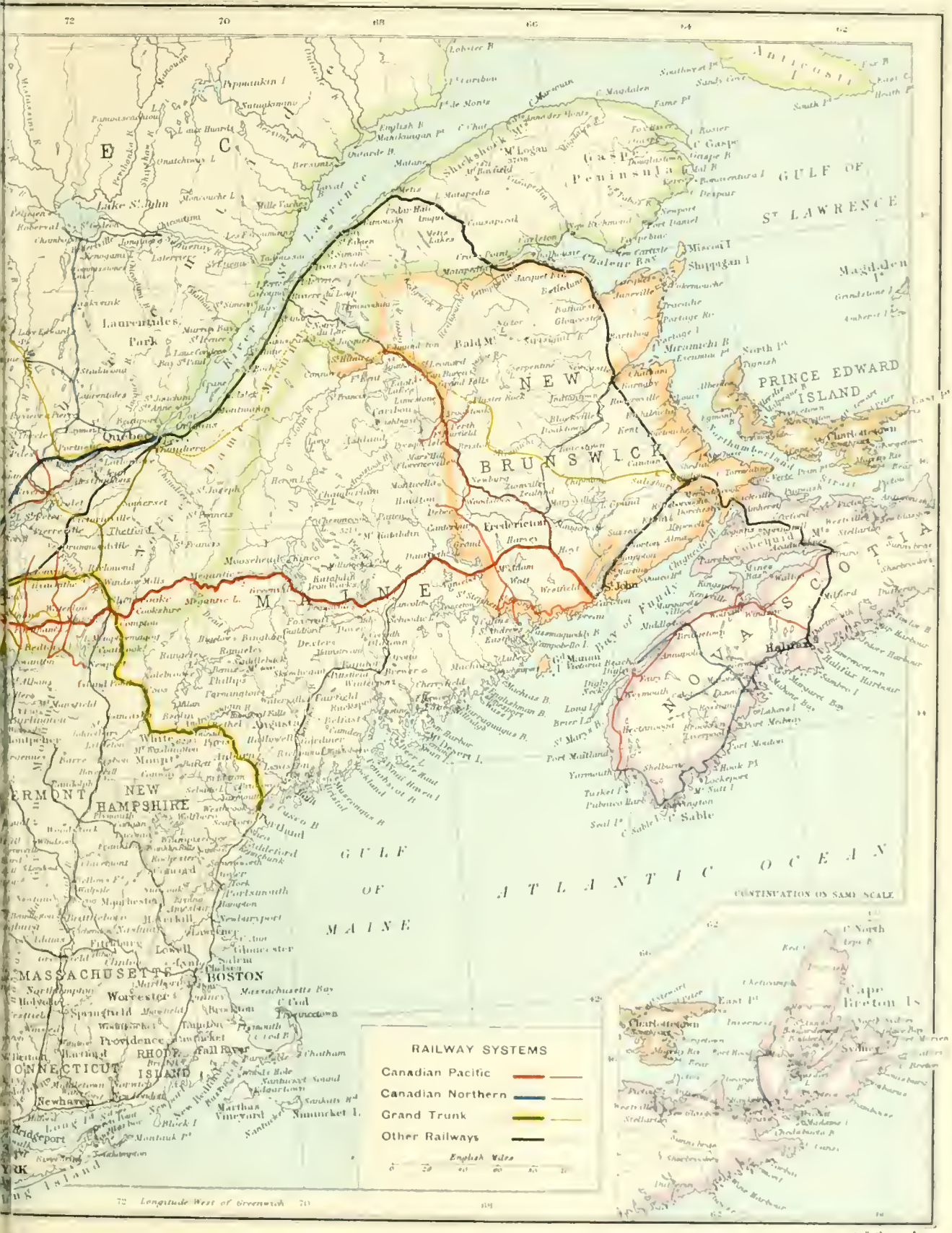

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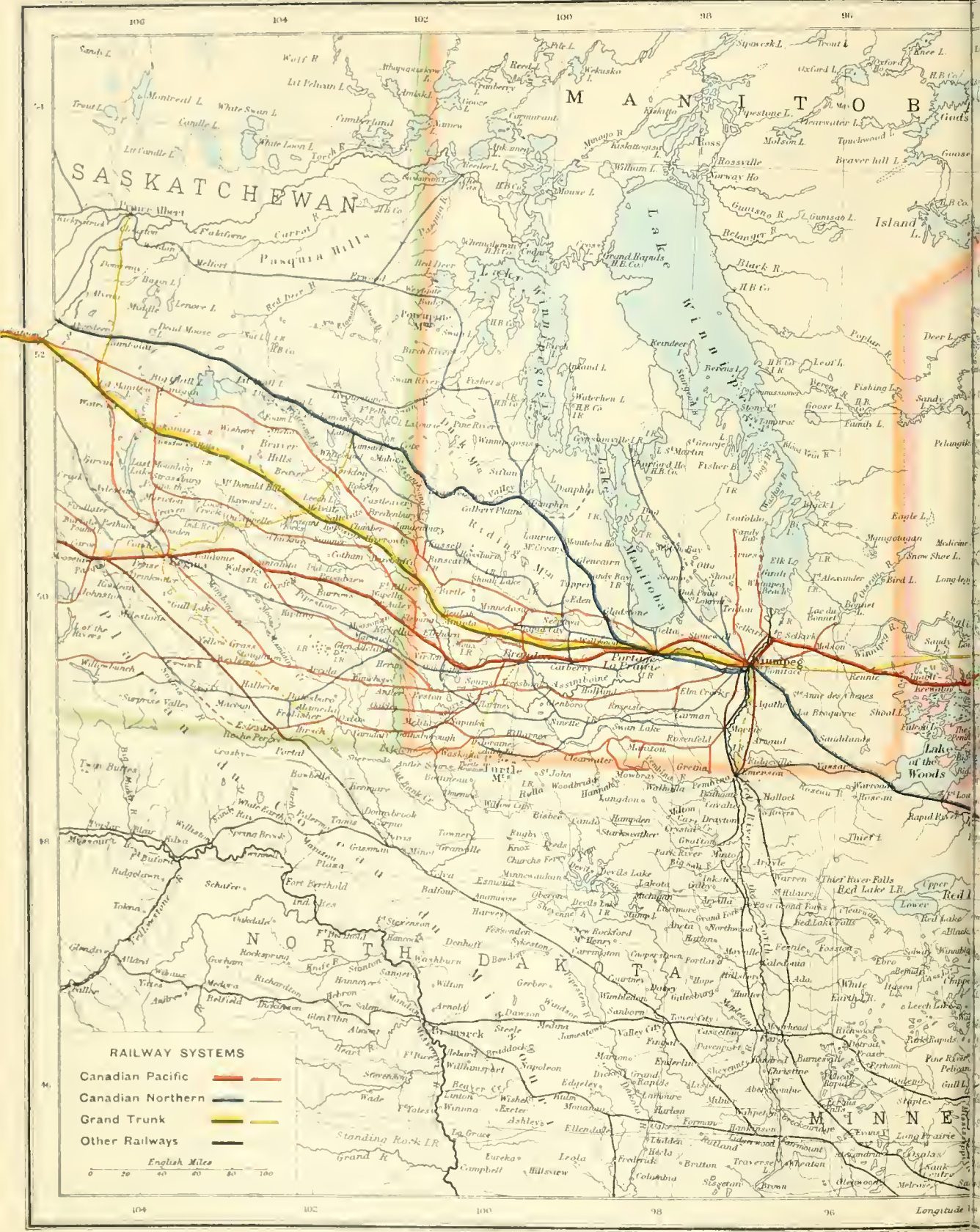


RAILWAY SYSTEMS

- Canadian Pacific
- Canadian Northern
- Grand Trunk
- Other Railways

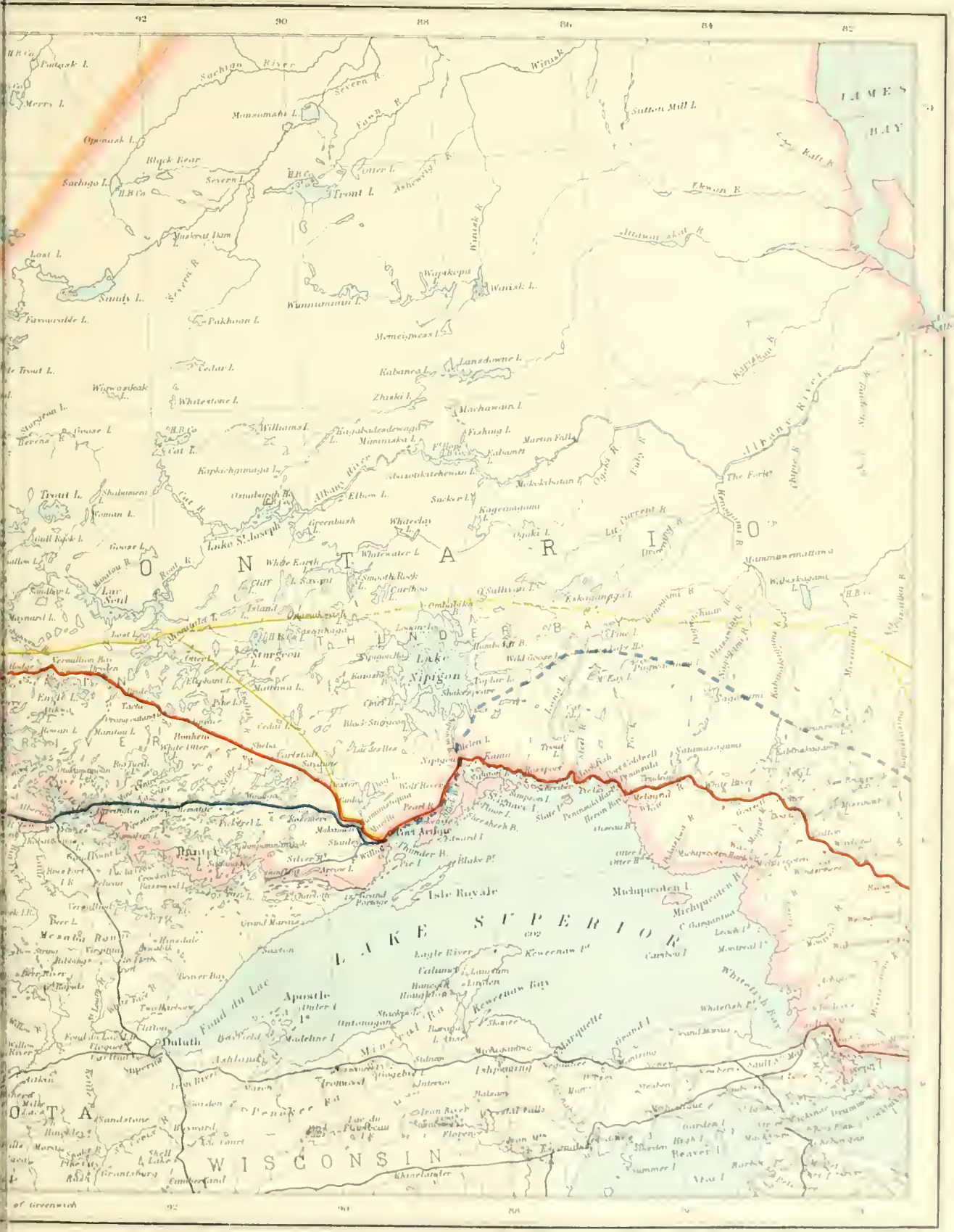
English Miles

0 20 40 60 80 100

The Edinburgh Geographical Institute

Prepared expressly for

ADA - CENTRAL SECTION


LAKE SUPERIOR
WISCONSIN
ONTARIO
Lake Superior
Isle Royale
Duluth
Fort Arthur
Lake St. Joseph
Lake Nipigon
Albany River
Winisk R.
Severn R.
Sachigo R.
Winisk L.
Trout L.
Sachigo L.
Severn L.
Lake Nipigon
Nipigon R.
Kaministiquia R.
Michipicoten I.
Michipicoten B.
Keweenaw Bay
Keweenaw Pt.
Apostle Is.
Pigeon R.
Pigeon Bay
Thunder B.
Thunder Bay
Black Bay
Nipigon B.
Jackfish B.
Red Rock
Nipigon Bay
Sturgeon L.
Eagle L.
Dog L.
Lac des Mille Lacs
Rainy L.
Rainy R.
Lac la Croix
Namakan L.
Kabetogama L.
Vermilion Bay
Vermilion R.
Lac Seul
Winnipeg R.
Lake of the Woods
Rainy River
Pigeon River
Grand Portage
Grand Marais
Beaver Bay
Two Harbors
Knife R.
Encampment I.
Split Rock R.
Agate B.
Agate I.
Gull R.
Gull L.
Saganaga L.
Sea Gull L.
Sea Gull R.
Pine I.
Pine R.
Pic R.
Pic I.
Pic
Heron Bay
Slate R.
Peninsula Harbour
Jackfish Bay
Otter Head
Otter I.
Otter B.
Gargantua
Agawa B.
Montreal R.
Montreal I.
Whitefish Pt.
Whitefish Bay
Point Iroquois
Sault Ste. Marie
Garden I.
Hog I.
Squaw I.
Summer I.
Beaver I.
Manitou I.
Isle Parisienne
Grand Island
Munising
Marquette
Huron Mts.
Huron Bay
Portage Entry
Portage L.
Portage R.
Portage Lake
Keweenaw Peninsula
Copper Harbor
Eagle River
Eagle Harbor
Calumet
Laurium
Houghton
Hancock
Portage Lake
Torch L.
Torch R.
Manitou R.
Manitou L.
Manitou Is.
Manitou Mts.
Manitou Falls
Manitou Rapids
Manitou Portage
Manitou Lake
Manitou Island
Manitou Passage
Manitou Mine
Manitou Mine Hill
Manitou Mine Hill Mine
Manitou Mine Hill Mine Shaft
Manitou Mine Hill Mine Shaft House
Manitou Mine Hill Mine Shaft House Chimney
Manitou Mine Hill Mine Shaft House Chimney Stack
Manitou Mine Hill Mine Shaft House Chimney Stack Top
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Manitou Mine Hill Mine Shaft House Chimney Stack Top Edge Line End Point Mark Dot Small Tiny Speck Fleck Mote Grain Bit Crumb Piece Lump Chunk Block Stone Rock Mass Boulder Pebble Gravel Sand Dust Powder
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Manitou Mine Hill Mine Shaft House Chimney Stack Top Edge Line End Point Mark Dot Small Tiny Speck Fleck Mote Grain Bit Crumb Piece Lump Chunk Block Stone Rock Mass Boulder Pebble Gravel Sand Dust Powder Flour Meal
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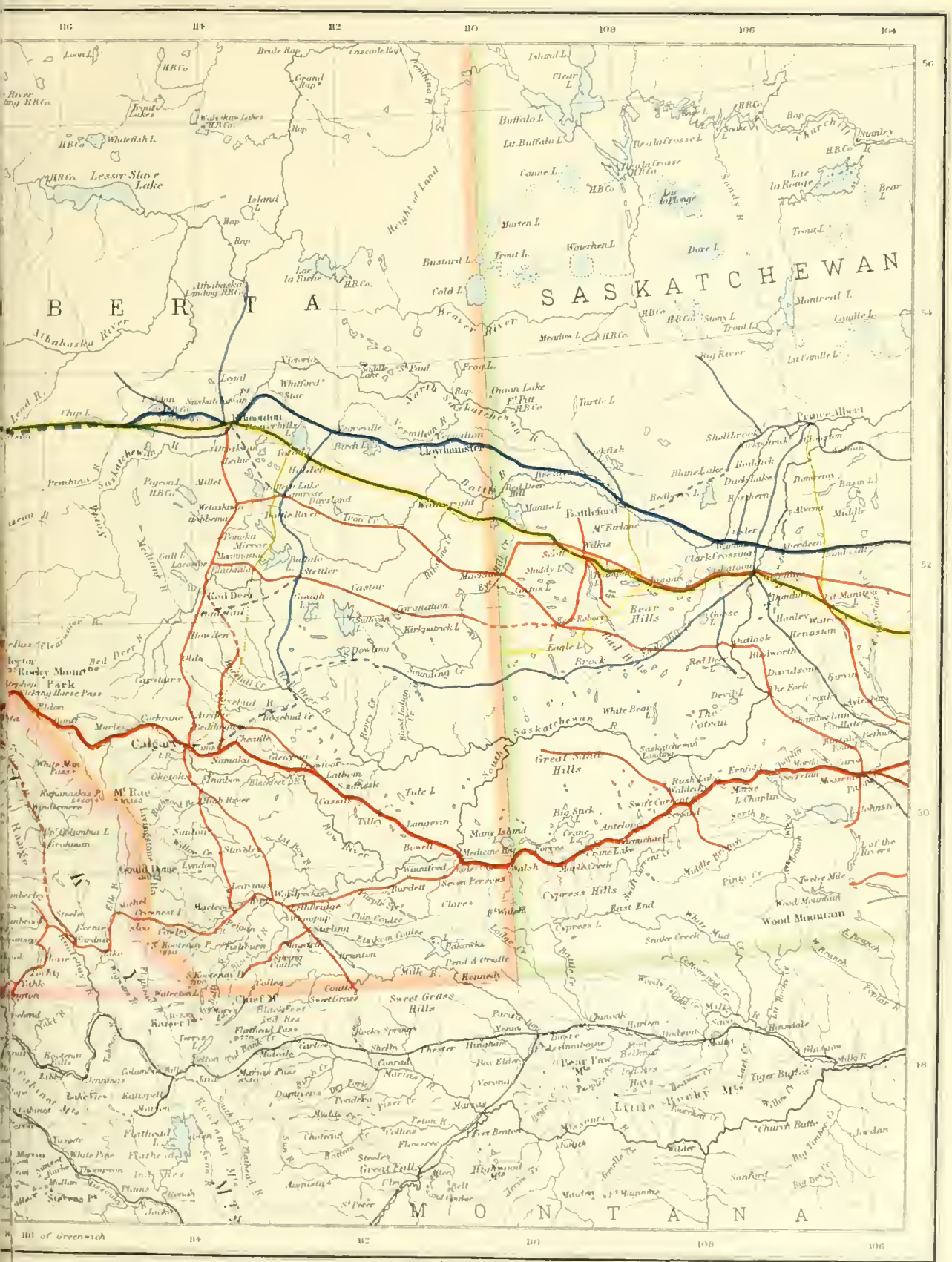
RAILWAYS OF C

The Edinburgh Geographical Institute

Prepared expressly

DA - WESTERN SECTION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Wood Mountain
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Bear Hills
Great Bend
Medicine Hat
Lethbridge
Macleod
Fort Walsh
Fort Qu'Appelle
Qu'Appelle R.
Red Deer R.
South Saskatchewan R.
North Saskatchewan R.
Bow River
Elbow R.
Milk R.
Frenchman R.
Battle R.
Beaver River
Height of Land
Athabaska River
Lesser Slave Lake
Lac la Biche
Lac la Ronge
Cold L.
Meadow L.
Montreal L.
Waterhen L.
Trout L.
Buffalo L.
Island L.
Clear L.
Canoe L.
Marten L.
Bustard L.
Frog L.
Turtle L.
Manito L.
Eagle L.
Deer L.
Crane L.
Tule L.
Many Island L.
Swift Current
Maple Creek
Walsh
Whitford
Lloydminster
Battleford
Clark's Crossing
Saskatoon
Duck Lake
Prince Albert
Shellbrook
Meadow Lake
Green Lake
Waterhen
Big River
Debden
Leoville
Rosthern
Hague
Dundurn
Aberdeen
Lanigan
Watrous
Hanley
Kenaston
Outlook
Elbow
Davidson
Craik
Lake Diefenbaker
Gravelbourg
Mossbank
Shaunavon
Maple Creek
Medicine Hat
Redcliff
Bow Island
Foremost
Cardston
Pincher Creek
Fort Macleod
Lethbridge
Coaldale
Taber
Vauxhall
Brooks
Gleichen
Strathmore
Okotoks
High River
Turner Valley
Black Diamond
Cochrane
Banff
Canmore
Exshaw
Morley
Stoney Indian Res.
Sarcee Res.
Blackfoot Res.
Blood Indian Res.
Peigan Res.
Waterton Lakes
Crowsnest Pass
Frank
Blairmore
Coleman
Bellevue
Hillcrest
Pincher Creek
Cowley
Lundbreck
Beaver Mines
Twin Butte
Willow Creek
Stand Off
Orton
Kipp
Lethbridge
Coutts
Sweet Grass
Sweet Grass Hills
Chief Mountain
Waterton Lakes
Kootenay Pass
Flathead Pass
Marias Pass
Summit
Essex
Hungry Horse
Columbia Falls
Kalispell
Whitefish
Libby
Troy
Eureka
Rexford
Fortine
Roosville
Elko
Fernie
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Red Deer
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Blackfalds
Gull Lake
Pigeon L.
Wetaskiwin
Leduc
Edmonton
St. Albert
Fort Saskatchewan
Vegreville
Vermilion
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Alliance
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Daysland
Killam
Stettler
Castor
Coronation
Consort
Oyen
Empress
Hanna
Drumheller
Rosebud
Three Hills
Acme
Irricana
Beiseker
Strathmore
Gleichen
Bassano
Brooks
Tilley
Suffield
Medicine Hat
Redcliff
Dunmore
Seven Persons
Burdett
Bow Island
Foremost
Manyberries
Milk River
Writing-on-Stone Park
Police Outpost
Head-Smashed-In Buffalo Jump
Dinosaur Provincial Park
Rosedale
Wayne
Rumsey
Delia
Carbon
Three Hills
Linden
Airdrie
Cochrane
Canmore
Exshaw
Morley
Bragg Creek
Priddis
Turner Valley
Black Diamond
Okotoks
High River
Longview
Nanton
Stavely
Claresholm
Fort Macleod

NATIONAL HIGHWAYS OVERLAND

I

EARLY GENERAL HISTORY

Highways and Highway Travel

SETTLEMENT in Canada in the latter days of the eighteenth and the beginning of the nineteenth centuries followed the waterways. The extensive coast-line of Nova Scotia with its numerous indentations, and the rivers finding their estuaries therein, afforded a relatively easy method of travel and determined the early lines of settlement. In New Brunswick the conditions so late as 1849 enable one to understand the earlier conditions. In that year Lieutenant-Governor Head pointed out in a dispatch to Earl Grey that the province was divided into long stretches of settlement with tracts of wilderness between, which were traversed at a few points by roads leading from one settlement to another. North from St John to Madawaska the line of settlement followed the River St John for two hundred miles. There was also a thin fringe of settlement along the coast from Baie Verte to the mouth of the Restigouche. In travelling from the valley of the St John to Chaleur Bay the greater part of the journey was made by canoe, and it was necessary to spend five nights in the woods on the way. In the Canadas the early course of settlement was determined by the St Lawrence and the Great Lakes. While the almost continuous line of white-walled villages which is to be found along the shores of the St Lawrence is in part due to the French-Canadian system of subdivision of property, it is also in part attributable to the fact that in the earlier days the river was the only highway.

But when settlement began to press back into the fertile stretches of land more remote from the waterways, the need of overland highways began to be felt. In Lower Canada the 'Edicts and Ordinances' of Louis XIV introduced the system of common roads which had prevailed under the feudal régime. This system was in general followed after the Cession. The supervision of road construction was in the hands of the *Grand Voyer*, a provincial official with extensive discretionary powers. In general each proprietor was responsible for the construction of the roads through his own lands. Where especial difficulties rendered such construction too onerous for the individual concerned, the *Grand Voyer* might declare the road a public work. In 1832 his powers were transferred to the Road Commissioners. This body exercised these powers until 1841, when they were transferred to the municipal authorities.

One of the first acts passed by the parliament of Upper Canada, sitting at Newark in 1793, placed the local roads under the control of a superintendent elected by the resident ratepayers. Roads were to be constructed and maintained by statute labour. Subsequently the statute labour was determined in proportion to property. Every male inhabitant between twenty-one and fifty not rated on the assessment roll was liable for three days' work.

During the period prior to 1841 the different provinces supervised the construction of the main trunk roads. In Upper Canada Lieutenant-Governor Simcoe, whose military training impressed him with the advantages of easy communication, planned a system of main highways which were to run north and south and east and west throughout the province. Thanks to his efforts Yonge Street was constructed from Toronto to Lake Simcoe in 1794, the work being done by the Queen's Rangers. With the opening of this road the North-West Fur Company diverted its cargoes from the Ottawa to the St Lawrence, Lake Ontario, and this new portage road. This route gave a more expeditious connection with the trading post at Mackinaw. The importance of this route to the transit trade across Canada is seen in the fact that the British goods which thus found their way to

Mackinaw were thence distributed as far south as the Spanish settlements at the mouth of the Mississippi. In the development of the Dundas Road, which, however, was of but little importance until after the War of 1812, land was granted to settlers along the road on condition that they made certain improvements thereon in one year.

In 1815 Lower Canada began to aid road construction. In the years 1815-17 grants of £63,600 were made, while in the period 1829-31 £120,000 were voted for this purpose. In Upper Canada the limited revenue, which in 1795 amounted to only £900, prevented any rapid development of the policy of subventions. In the years between 1804 and 1812 small votes were made. After the War of 1812 an active policy was adopted. In 1815 there was a vote of £20,000, which increased between 1830 and 1833 to £128,000. Between 1836 and 1840 £100,000 were voted for the same purpose. In Nova Scotia and New Brunswick the construction of grand or trunk roads was undertaken at an early date. As early as 1829 stage-coaches plied between Halifax and Windsor, connecting with a packet service between the latter place and St John, New Brunswick. The roads in New Brunswick, in 1850, 'were good and creditable to the Province.'[1] In 1835 there were roads radiating from St John to Miramichi, St Andrews and Fredericton. The settlement of the Eastern Townships of Quebec was helped on by the British American Land Company. By 1835 roads had been laid out which connected the Eastern Townships with the St Lawrence as follows :

Quebec by St Nicholas to Sherbrooke .	120 miles
Montreal through Chambly and Granby to Sherbrooke	100 ,,
Three Rivers and Port St Francis along the banks of the St Francis River through Drummondville and Melbourne to Sherbrooke	120 ,,

In the development of the highway system radiating from different points on the St Lawrence, connections with points in the United States had also come into existence at an early

[1] Johnston's *Notes on North America*, 1850.

date. As early as 1827 the journey from Montreal to Albany through La Prairie, St Johns, Mississquoi Bay, Swanton, St Albans, Middlebury, Poultney and Salem could be made in three days. In 1847 the baggage of Lord Elgin came to Montreal by way of Albany.

The first through stage between Montreal and Kingston was established on January 1, 1816. The journey took three days. In January of the following year a stage service between Kingston and York (now Toronto) began. The fare for this journey was eighteen dollars. The stage route between York and Montreal was operated only in the winter, because it could not compete in summer with the steamers on the St Lawrence. In the winter of 1828 the stage journey from Montreal to Bytown (now Ottawa) took two days, passengers being interchanged at Hawkesbury. In the summer season the journey between the same points was made in thirty-six hours by means of stages on the portages from Montreal to Lachine and from Grenville to Carillon, and by steamboats on the intervening water stretches. At the same time the winter stage journey between Montreal and Quebec took two days.

Between St John, New Brunswick, and Quebec the Kempt, or old military, Road, traversing a distance of 455 miles, formed the post road connecting Nova Scotia with Canada. About one hundred miles of the Kempt Road passed through the disputed territory bound up with the question of the Maine boundary. Although some £7250 had been expended on this road between Metis and the Restigouche up to 1833, yet in 1840 it was in a thoroughly bad condition. The New Brunswick legislature found that it passed over precipitous mountains, through forests and swamps, and that at certain periods of the year the mail carriers had to carry the mails on their backs. It was possible for carriages to a point fourteen miles above Fredericton, but only in the summer time. In the spring and autumn the road was very wet. In the winter the travel, wherever passable, was on the ice of the rivers. Johnston, who went over this road in 1849, in describing his journey between the St Lawrence and the Restigouche, said :

> This road between the rivers is a very rude and difficult one. It is barely blocked out of sufficient width to allow a waggon with one horse to pass. The trees are cut down and hauled off, boulder stones and small inequalities removed, and bridges built where they are absolutely necessary. Only the horses of the country, which all their lives have been trained to it, could conduct even light waggons across the numerous steep hills over which the road passes.

On this road grades of fourteen per cent were common.

But the highways afforded at best a rude and inconvenient means of communication, which in bad weather became well-nigh impassable. The only points in Lower Canada which were served by good roads in the period prior to 1841 were Quebec and Montreal, and these roads were under the control of turnpike trusts, which were created in the case of Quebec in 1805, and in the case of Montreal in 1829. In Upper Canada macadamized roads were undertaken near Toronto in 1833. Between this year and 1837 grants were made by the legislature in aid of such construction on Yonge Street, the Dundas Road and the Kingston Road. But these roads were found too expensive, and plank roads, which could be built at half the cost of the macadamized roads, began to be constructed in the late thirties. The discomforts of travelling on the Kempt Road, which have been referred to, were paralleled on the other highways. The dependence of Montreal on water communication and winter roads was such that as late as 1851 the cost of food and fuel doubled while the ice was forming on the river. Between Montreal and St Hyacinthe, a distance of thirty miles, it took a stage-coach from twelve to fifteen hours to make the journey in the spring and autumn. From La Prairie to St Johns, a distance of fourteen miles, it took a day to bring three barrels of ashes in a cart drawn by two horses. In 1836 the Dundas Road near Guelph was almost impassable in spring and autumn, and but little better in summer. In 1852 there was yet no road fit for a vehicle between Goderich and Port Sarnia. From the townships of Innisfil or Vespra, even when the roads were good, it cost 7½d. per bushel to convey

wheat to Lake Ontario. In 1817, in the Talbot settlement, eighteen bushels of wheat were exchanged for a barrel of salt, while one bushel of wheat was given for a yard of cotton. The poor state of the roads and consequent heavy costs of transportation kept down the price of land. So important was the effect of plank roads that their construction through the townships of Toronto and Chinguacousy increased the values of farms along their routes by fifty per cent. Between Port St Francis and Sherbrooke it cost, in 1835, twenty cents per ton per mile to move freight. The traveller by stage-coach from St John to Fredericton in 1835 paid twenty shillings to travel a distance of sixty-five miles, while the traveller who was willing to face the discomforts of the journey by road from St John to Quebec paid £12, 10s., and if he hired his own conveyance, even more.

It will thus readily be seen that the high cost of transportation made all freight traffic aside from short-haul traffic practically impossible on the highways. The cost of transportation thus rendered it difficult to dispose of surplus products. There were also added for travellers the dangers of the roads. During the winter of 1848 a drunken driver drove the Upper Canada stage into open water on Lake St Louis above Lachine. One of the passengers clung to the stage-coach all night, and had his hands so badly frost-bitten that they had to be amputated. Nor were highway-men wanting, for in 1821 the York mail was robbed, and on March 19, 1847, the Upper Canada stage was held up on the Upper Lachine road.

In many ways the early activities of the provinces in regard to highway construction fit into the later develop-ments in regard to railways, and this not only because of common ends, but also because of conscious policy adopted to these ends. In the attempt to develop through lines of communication, not only as between the provinces, but also with the United States, the policy adopted was the precursor of the later railway policy. The subsidy policy, giving direct aid to transportation, was early developed. Before 1841 Upper and Lower Canada alone had expended $2,000,000 in aid of road construction, and had also guaranteed interest on

the obligations of various turnpike trusts. But the development had not been satisfactory.

Speedier means of transit less dependent on the vagaries of the weather were necessary. In 1838 David Stevenson, an English civil engineer, in his *Sketch of the Civil Engineering of North America*, writes :

> The rigour of a Canadian winter, covering the face of the country with snow, and congealing every river, lake and harbour, produces a stagnation of trade which cannot fail to have a bad effect on the commerce of the country and the habits of the people, who are compelled to complete their whole business transactions during the summer and autumn months, and remain in a state of comparative idleness during the remainder of the year.

The then existing conditions do not wholly justify the acrimony of this criticism, but it must be admitted that with the coming of winter and the closing of the waterways, both natural and artificial, the dependence on highway communication alone kept the different sections of the colonies remote from one another. This affected not only the economic development but the intellectual standpoint ; not only freight but ideas found obstacles in the way of free interchange. It was not until the thirties that the leading newspaper of Montreal had its own political correspondent at Quebec during the session of the legislature. Local interests tended to predominate. Information concerning other provinces, or even other sections of the same province, was always meagre and usually second-hand.

Beginnings of Railways

So soon as railways began to operate in England, their practical working was of interest to the British North American colonies. Not only was there interest in what the railways were doing, but there was, at the same time, discussion of the far-reaching effects of railway construction. Between the years 1816 and 1820 Thomas Gray, an Englishman too little remembered, who was the first to develop general ideas

regarding the influence of railways, had described the economic and social influence of railways in terms which, while not justified by the then meagre accomplishments of the railways, have been amply justified by later developments. In a new country where the roads were but beginnings and idle land awaited the settler, his words found a ready acceptance, and in October and November 1824 his enthusiastic predictions were discussed in the columns of the Montreal *Gazette*, the Montreal *Herald* and the Quebec *Mercury*.

Even at this early date the two leading phases of policy in early Canadian railway development were present—the one leading to direct connections with the United States, the other to the development of inter-provincial lines. The contrasting policies thus begun are constantly intertwining and again separating in the following years. In an editorial on December 1, 1824, the Montreal *Gazette*, after stating that it preferred railways to canals, advocated the construction of the Champlain and St Lawrence Railway, which would serve as a portage link in a more direct communication between the St Lawrence River and Lake Champlain, thereby affording a more direct connection with New York. To those who feared that this would be dangerous in time of war because of the facilities it would afford for the transportation of United States troops, it rejoined that 'the communication could be cut off by breaking up the Rail-Road on the shortest notice.' And there were not lacking those who, in advocating the construction of railways, asserted that the primary essential for the defence of the colonies was the construction of light lines of railway on the frontier, which would be more important in the movement of troops than canals in the rear of the lines of defence.

In New Brunswick the more ambitious project of the St Andrews and Quebec Railway, which would connect the seaboard provinces with Lower Canada, was discussed at a public meeting at St Andrews in 1828, but the project remained quiescent until 1832. In the discussion that mixture of commercial advantage and high politics, which was soon to characterize every inter-provincial railway enterprise, for the first time appeared. On the side of commercial advantage

it was urged that this railway would afford the means whereby the timber, provisions, ashes and other exports of the interior provinces might be disposed of much more expeditiously than if sent by the River St Lawrence. It would, moreover, give Canada the advantage of a winter port. The large expenditure which would be necessitated caused an appeal for imperial aid. So in 1836 we find the legislature of New Brunswick resolving

> That the establishment of a Rail Road between the Port of St Andrews and the Bay of Fundy . . . and the Port of Quebec, would promote the settlement of the country, greatly facilitate the intercourse and extend the interchange of commodities between the British possessions in America, increase the demand for British manufactures, afford facilities for the conveyance and settlement of emigrants, and be the means of giving additional employment to British shipping.

Nova Scotia had already shown its interest in improved transportation connection with Lower Canada. In March 1830 a motion was introduced in the Nova Scotia legislature to appoint a committee to ascertain the best means of establishing steamboat connection between Halifax and Quebec. Earlier in this year there had been a meeting in Montreal of those interested in the project, but nothing came of it. In March 1836 the legislature of Nova Scotia passed a resolution favouring the project for a Quebec and St Andrews railway. Between Halifax and Windsor there was an established route forming a portion of the mixed land and water route between Halifax and St John. The residents along the route had subscribed £300 for a railway survey, but on April 26, 1830, the legislature, notwithstanding Joseph Howe's support of the project, refused by a vote of twelve to eleven to grant £250 to supplement this sum. The interest of New Brunswick in the Quebec and St Andrews Railway remained unabated. In December 1835 a delegation was sent to the city of Quebec to arouse interest in the scheme. The delegation was favourably received, resolutions supporting the enterprise being passed by both houses of the legislature. New Brunswick made a grant for a survey, and in January

1836 Smith and Hatheway reported on the project as far as the height-of-land. The line would be about 300 miles long and would cost about £1,000,000. In March of this year the St Andrews and Quebec Railroad Company was incorporated. Appeals to the imperial government were successful in obtaining, in May 1836, a grant of £10,000 in aid of a systematic survey.

Notwithstanding the enthusiastic activity of New Brunswick and the cordial interest of Lower Canada and Nova Scotia, the project was too ambitious for the time. The discontent existing in Lower Canada, soon to break out in open revolt, permitted but scant welcome for a scheme so ostensibly imperial in its nature. The disputes existing in regard to the boundary between New Brunswick and Maine also co-operated to delay the project. It had been intended to follow a direct route from St Andrews to Quebec, and in 1836 Captain Yule, acting under imperial instructions, had begun the survey. The projected line, however, fell within the disputed territory, and exception was taken by the United States. Under these conditions nothing could be done. The Ashburton Treaty found that seven-twelfths of the disputed territory belonged to the United States. The later history of the enterprise connects itself with the Halifax and Quebec Railway.

While the Maritime Provinces were devoting their attention to an enterprise which had too little prospect of commercial success, Lower Canada began in 1830 a more active discussion of the Champlain and St Lawrence Railway. There were conflicting ideas as to the importance of railways. To some it seemed that railways would simply supplement the existing canal systems, while others with clearer understanding were of opinion that, unless railways were built, the railways of the United States would attract the traffic which it had been expected the canals of the St Lawrence would carry to Quebec.

The anticipations regarding the Champlain and St Lawrence Railway were sufficiently modest, for it was suggested that wooden railways, on which the cars would be drawn by horses, would be of value for transportation

purposes in the spring and autumn. The Quebec *Mercury* of January 10, 1830, contains a curious suggestion that the delays consequent upon the heavy snows of winter might be avoided by having the railway elevated two feet above the ground and built as far as practicable in the direction of the prevailing winter winds. The speed hoped for may be surmised from the fact that the newspapers commented on the 'unparalleled speed' of the Stockton and Darlington Railway, which had conveyed six or seven hundred passengers 'at the rates of ten, twelve and sixteen miles per hour.'

The Company of the Proprietors of the Champlain and St Lawrence Railroad was incorporated in 1832. There were seventy-four proprietors, and the capital provided for was £50,000. The subscription books were opened on May 1, 1832, at the Exchange Coffee House in Montreal. In the course of the discussion on the charter the policy of government ownership was advocated by some. Papineau, the leader of the radical French section, took an uncompromising stand in favour of private ownership, contending that government ownership left the way open for jobbery. It is interesting to note that, in Canada as in England, the opponents of railways asked 'what would become of the poor carters.' The carters themselves, who had been engaged in the transportation of goods in the spring and autumn between the proposed termini of the railway, also sent in a petition protesting against the railway.

In this legislation attention had been paid to the contemporary railway legislation of the United States, some seven or eight railway acts having been considered. From the standpoint of public policy, the provisions in regard to rate regulation and the reserved rights of the State demand attention. As in England, maximum rates for both freight and passengers were provided, the rates—for the sixteen miles of the railway—being 7·5d. sterling per ton of freight, and 2·4d. sterling for passengers, per mile. These maximum rates might be charged so long as the dividend did not exceed twelve per cent. When the dividend exceeded this figure the maxima were to be reduced by five per cent for every ten shillings per share of excess over this dividend. It was

expected that this automatic readjustment would be carried out by the company, the process of readjustment, however, not being effective until one year after the completion of the road. Provision for state purchase was adopted from the contemporary railway legislation of the United States. But the act went further than its American analogues, for it empowered the government to take over the work and its appurtenances at any time upon paying the full amount of the paid-up shares together with an amount equal to twenty per cent thereon.

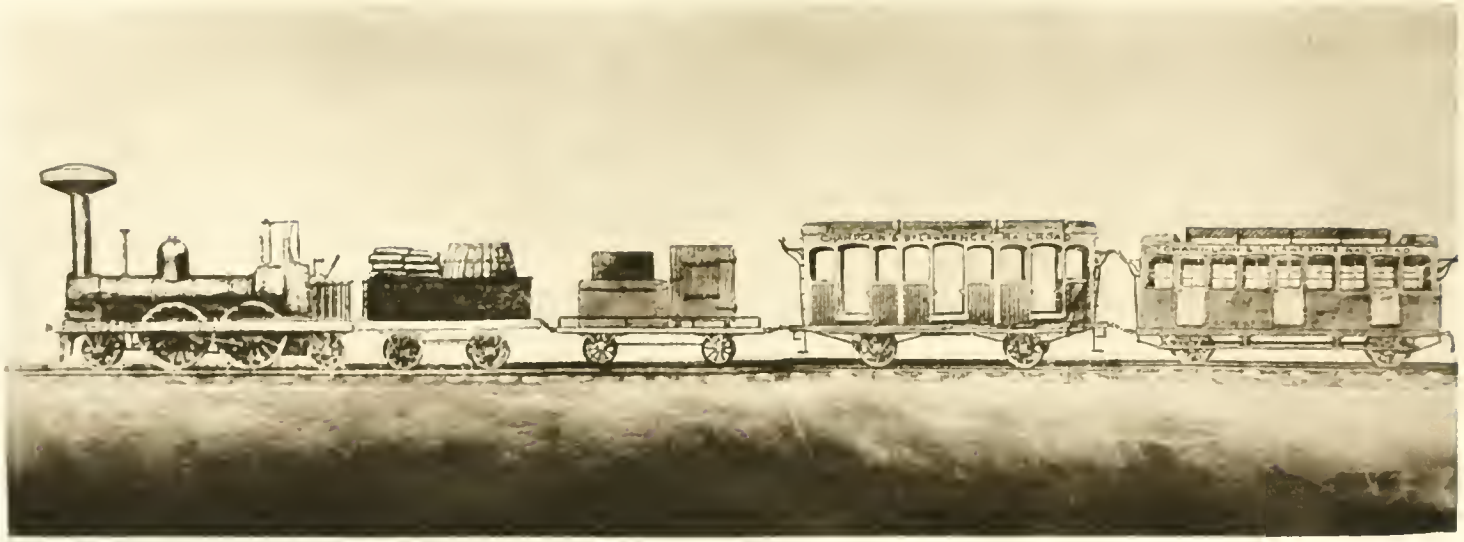
While the charter had provided that the road should be completed within three years from the date of incorporation, it was not until 1835 that construction began. This road, the first in Canada, was opened for traffic in 1836, being constructed on a gauge of 5 feet 6 inches. J. George, who, early in 1830, in the columns of the Quebec *Mercury*, had advocated wooden rails, presented the same idea in the year of the chartering of the Champlain and St Lawrence Railway, before the Standing Committee on Roads and Public Improvements of Lower Canada. In order to obtain cheap construction, his suggestion was adopted by the railway, and wooden rails, on top of which flat bars of iron were spiked, were used. This was a common practice at the time in the United States, having been used in North Carolina as early as 1830. In the report on the survey of the Quebec and St Andrews, one of the engineers had recommended using pine rails covered on top with the heart wood of red beech. The first train of the Champlain and St Lawrence was composed of four cars drawn by horses, and it was not until 1837 that steam locomotives were placed on the line. The wooden 'strap' rails were used as late as 1847, when they were replaced by iron rails.

From the year 1825 onward a large emigration from the British Isles had set in, much of which was attracted by Upper Canada. In the years 1831 and 1832 respectively, 50,000 and 52,000 immigrants landed at Quebec. This stimulated railway development. The charter of the Cobourg railway in 1832 was the first granted in Upper Canada. The lavishness of chartering in Upper Canada as contrasted with

THE FIRST STEAM RAILWAY TRAIN IN CANADA

ON THE CHAMPLAIN AND ST LAWRENCE RAILWAY, 1837

From a print in the Château de Ramezay



the more conservative policy of Lower Canada is attributable to the fact that while the former was desirous of a policy of rapid settlement and development of the country, the latter had its attention concentrated on the nearer advantage of commerce. In its desire to open up the rich agricultural district between Lake Ontario and Lake Huron, Upper Canada had granted, before 1837, charters for no fewer than three parallel lines; in the same period, the authorized capital stock of the railway companies chartered in Upper Canada was £1,775,000, while in Lower Canada it was only £250,000.

But the mere granting of charters did not bring capital, and the year 1837 passed away fruitless. The Rebellion of 1837 caused immigration to fall off. The difficulties of the time were further aggravated by the financial crisis of 1837, which, beginning in the United States, extended to Canada at a time when the people were suffering from the poor harvests of 1835 and 1836. When the first charters were granted, it was thought that private capital would not need the stimulus of government aid. But the Cobourg Railway, which had been chartered in 1832, had not begun construction in 1836, in which year the time for beginning work was extended three years. The government now found it necessary to offer grants in aid of railway enterprise; but even this did not attract capital.

With the settlement of the constitutional difficulties which had led to the rebellion and the establishment of a truly representative system of government, it was hoped that the way would be cleared for a new advance in the improvement of the transportation system. The population of Lower Canada had, by 1841, increased to 630,000, while that of Upper Canada was 470,000. The vigorous policy of transportation expansion advocated by Upper Canada was distasteful to Lower Canada because of the burden of the debt thereby created. In the session of 1836-37 Upper Canada had granted aid to the London and Gore Railway, afterwards known as the Great Western. After the Union, Upper Canada retained the idea which lay behind this grant, namely, that this railway would tap the traffic of the Western States, and thus add to the scanty profits of the Canadian

carrying trade. But still the hopes remained without fruition, and progress was so sluggish that when in 1846 the charter of the Cobourg Railway was revived, it was thought best to rest content with a plank road and a ferry.

The years 1842 to 1849 were years of trial and stress for the Canadas. The changing trade policy of England exercised a very important effect upon the railway development of Canada. Under the policy of protection hitherto in vogue in England, the Canadas had occupied a preferential position in the English market. The new policy so affected the Canadian grain trade that in 1842 the number of sea-going vessels ascending the St Lawrence fell off by 377, while in the period of 1841-43 the volume of imports and exports fell off by £500,000.

While the old policy had assisted in building up Montreal, there were not lacking protests in Upper Canada. In 1839 Sir Francis Bond Head said : ' Every person acquainted with Upper Canada foresees . . . that its produce pent up under high pressure must be off by licit or illicit means to the United States.' So early as 1836 a petition, signed by seventy members of the Board of Trade of Toronto, had been presented to the legislature of Upper Canada praying that the imperial government should be requested to use its good offices with the government at Washington with a view to obtaining the admission into the provinces of British manufactures, through the United States, duty free. But no change was made. At the same time Lower Canada was jealous of the ambitious railway projects of its sister province. When the charter of the Niagara and Detroit Railway was before parliament in 1846, it was opposed on the ground that it would greatly injure the interests of Lower Canada by diverting traffic to the United States.

An attempt was made to lessen the strain of the transition from protection to free trade by the passage in 1843 of an imperial act, the Canadian Corn Bill, which admitted Canadian grain and flour to the English market on a preferential footing, it being hoped thereby to divert the grain of the Western States to the Canadian waterways. This in reality aggravated conditions ; wheat was imported from

the United States, milled in Canada and re-exported as Canadian flour. A large amount of capital was invested in transportation and in milling. The bonding privilege was not in existence at the time, and all the western trade was forced down to the sea by way of Montreal. With the abolition of the preferential duties in favour of Canadian grain, a large amount of fixed capital was made useless. In 1846 the disadvantage of Montreal was made greater by the creation of the bonding privilege whereby goods from Western Canada could be sent through the United States in bond and shipped at American ports. This brought about a change in business methods. Where formerly the closing of the Canadian waterways by winter compelled the merchant of Upper Canada to bring in the winter's stock during the summer season, he could now carry smaller stocks and replenish them from time to time by means of importations through United States territory over the railways of that country. Discontent was keen, and it culminated in the annexation manifesto of 1849. The unfavourable condition of the country's credit, the stagnation of business, the destruction of fixed capital, the absence of industry, were all attributed to the abolition of the protective policy of England ; and the only remedy, in the minds of the signers of the manifesto, was annexation to the United States.

Truly, conditions were gloomy. Even repudiation of debt had been considered in 1848. In this year, to meet the excess expenditure consequent upon heavy payments for public works, it had been found necessary to issue one million dollars of exchequer bills having one year to run and bearing interest at six per cent. These fell considerably below par. While the railway system was being rapidly extended in the United States, construction was being slowly carried on in Canada on the Champlain and St Lawrence, the St Lawrence and Atlantic, the Lachine, the St Lawrence and Industry, and the Erie and Ontario. No comprehensive system had been worked out. The Lachine Railway was undertaken in 1846 as a suburban portage railway, and was opened for traffic in 1847. In 1847 American locomotives weighing eighteen tons each were used, and the eight-mile journey between

Montreal and Lachine was made in twenty-one minutes. On July 24, 1848, the 'James Ferrier,' the first locomotive imported into Lower Canada from Great Britain, was used on this route. This locomotive had been built in Dundee, Scotland. On this line there were compartment cars of the English type with accommodation for three classes of passengers. In Upper Canada the only line of railway was the Erie and Ontario—a horse tramway from Queenston to Chippawa.

In 1850 the *American Railroad Journal* said that 'all of the great cities of the United States have for years been prosecuting with most untiring perseverance works of immense magnitude and cost, for the purpose of draining from its natural channel the business of the vast region which the St Lawrence drains.' While Upper Canada had indulged in ambitious, but so far fruitless, railway projects to tap the trade of the Western States, it did not seek to carry this traffic to the seaboard over an all-Canadian route. At the same time the Eastern States were hoping to divert to their own lines the traffic of Upper Canada as well as that of the Western States which the projected lines of Upper Canada might attract. By 1840 rail connection had been established in the United States with Ogdensburg and Sackett's Harbour. As early as 1841 Oswego anticipated that railways centring there would enable it to participate in Canadian trade with England via Kingston. The city of Boston early recognized the advantages flowing from the bonding system, and its reliance on the advantages of this system has ever since continued. It saw in it a means of overcoming the commercial competition of New York as well as of ensuring its own development. During the year 1851 the completion of various short lines of railway had given a connection with Lake Champlain. Boston hoped through this new route to attract the trade which otherwise would move over the route, in which the Champlain and St Lawrence Railway was a link, to New York. It hoped by attracting traffic to Boston to add to the receipts of the Western Railway, now the Boston and Albany, which had been aided by the State of Massachusetts, and the construction of which had been

considered as the charter of Boston's commercial independence of the city of New York—an independence which had been endangered by the construction of the Erie Canal. So great was the desire of Boston to attract Canadian traffic that in 1851 a committee was sent to Toronto to ask representatives of the Canadas to attend a meeting in Boston in honour of the new railway route. At a meeting of the merchants of Boston on August 26 of that year it was resolved

> That the establishment of railroad communication between Boston and the Canadas and Great Britain is an event in which the commercial community is deeply interested, as it is calculated to work great and beneficial changes in the business relations of the people of both nations; and that, as the advantages which must result from these new means of intercommunication will be mutual, it is a fit subject of mutual congratulation, and a proper occasion for a common celebration.

At the celebration which took place, September 17-19, 1851, the Canadas were represented by the governor-general, who was accompanied by a party which included the Hon. John A. Macdonald, the solicitor-general, Étienne Pascal Taché, Francis Hincks and Allan Napier MacNab. The interest was not limited to the mercantile class alone. Even in the pulpits of Boston this jubilee of 1851 was hailed as establishing Boston's commercial independence, and the great was emphasized by the less by saying that 'by means of the recently finished lines of railroad the trade of the Canadas will be attracted to our marts, and flour brought here a few cents cheaper on a barrel than before.'

It was, however, the State of Maine which was the first to attempt to obtain a direct connection with the port of Montreal. In 1845 a charter was granted by the Canadas to the St Lawrence and Atlantic, which was to connect at the international boundary with the Atlantic and St Lawrence, which was being built from Portland, Maine. While Boston had felt the competition of New York, the Atlantic and St Lawrence was Portland's attempt to recover

the position it had lost from the overshadowing influence of Boston.

The interest of Portland in connection with Canada had begun as early as 1835, when Colonel Long, an officer of the United States Topographical Corps, accompanied by Captain Yule of the Royal Engineers, made a reconnaissance from Belfast, Maine, to Quebec. In the following year the State of Maine granted a charter to the Belfast and Quebec, which was the precursor of the Atlantic and St Lawrence.

In 1844 the residents of the Eastern Townships became interested in the question of rail connection with the United States seaboard, alleging that the bad roads prevented the proper marketing of their grain. In the same year John A. Poor, whose name is inseparably identified with the earlier railway history of Maine, visited Montreal with William C. Preble, the president of the Atlantic and St Lawrence, and conducted an active propaganda. Letters having appeared in the Montreal papers advocating the superior advantages of the Boston connection, he retorted by showing that Portland had especial advantages as a winter port, and was only 246 miles from Montreal as against 351 miles to Boston. It was prophesied that the route would earn from six per cent to seven and a half per cent.

At first the hitherto existing commercial advantage which Montreal had possessed under the preferential policy caused the merchants of that city to be indifferent, but with the passing of this policy the advantage of Montreal was gone, and, spurred on by necessity, the merchants came out in favour of the Portland line. It became the general belief, expressed in the *Canadian Economist* of May 9, 1846, that

> The Portland Railroad is not simply a measure of advantage to Montreal, but an essential condition of her continued prosperity. Without it her trade instead of increasing will, in our opinion, decline, and with a declining commerce will come its attendants, a diminishing or at best a stationary population, and a decrease in the value of real estate.

Once interest in American rail connections began, the city of Montreal became enthusiastic, and added thereto the idea

of rail connections which would ensure the Upper Canada traffic being attracted to it as well. Here again the idea was the frankly commercial one of retaining the commercial prominence it had possessed at an earlier date. In 1848 William F. Coffin, the joint sheriff of Montreal, in his pamphlet *Three Chapters on a Triple Project—The Canal and Rail*, urged that in addition to rail connection between Montreal and Prescott, a canal should be built from the St Lawrence to Lake Champlain, and that there should be constructed, without delay, lines which would connect Montreal with the great American cities of the Atlantic seaboard.

Energetic attempts were made by Portland to push forward its portion of the enterprise. It took stock to the amount of $50 *per capita* of its population of 20,000, and also became responsible for a bonded indebtedness of $100 *per capita*. In Canada the names of A. N. Morin, A. T. Galt and John Young were associated with the enterprise.

The railway proceeded, although slowly. By December 26, 1848, the line had been opened from Montreal to St Hyacinthe, a distance of thirty miles; while during the following year thirty-six miles had been constructed in Maine. In their enthusiasm the citizens of Montreal had believed in 1845 that within one year from the completion of the road they would furnish traffic to give an income of $725,000. The expense of construction was great; the iron rails which were imported from England cost $36 per ton laid down at Montreal, and $44 per ton at Portland. The attempts to raise capital in England in 1846 had proved unsatisfactory. By 1848 conditions were critical. In 1849 the city of Montreal undertook to contribute £125,000 to the enterprise. The limitations of the railway's resources, as well as the endurance of its patrons, are exemplified in an advertisement which appeared in the Montreal *Gazette* of April 11, 1849, stating that owing to the necessity of overhauling the locomotives preparatory to the spring business, the cars would cease running between St Hyacinthe and Montreal for fifteen or twenty days, and that due notice would be given of resumption. Its further development depended on the contribution of government aid under the policy of a new period.

II

THE MARITIME PROVINCES

The Halifax and Quebec Project

THE findings of the Ashburton Treaty made the Quebec and St Andrews project one of local interest alone. It was succeeded by the project for a line from Halifax to Quebec, whose varying fortunes are closely connected with the early history of railways in the Canadas.

The events of the rebellion in the Canadas in 1837 had turned the attention of the imperial authorities to the difficulty of transporting troops in the North American wilds. The international difficulties of the period from 1840 to 1846 still further concentrated attention on the military advantages of railway construction. Lord Durham, with his large views of the future of the British North American colonies, foresaw Confederation, and recommended the construction of an intercolonial railway which he deemed the essential link of colonial union. Along with the imperial interest in railway construction went the local interest in a railway expansion which would meet the needs of an expanding population.

In 1846 Nova Scotia, New Brunswick and Canada agreed that a survey of the route of the Halifax and Quebec Railway should be undertaken, each province being responsible for the expenditure on the portion of the survey within its boundaries. In 1847 the survey was undertaken by Major Robinson, an imperial officer. The route chosen by him went from Halifax to Truro, passing over the Cobequid Mountains; thence by the Gulf shore to the Miramichi; thence to Chaleur Bay, and along the coast to the south of the Metapedia; and thence along the St Lawrence to Point Lévis, opposite Quebec. This is substantially the route chosen for the Intercolonial some twenty years later. This circuitous route was attributable to the desire to obtain the military advantage of being as far as possible from the United States boundary. The completed work, it was estimated, would cost £4,800,000.

There now followed a complicated series of negotiations and propositions. The colonies, conscious of the magnitude of the enterprise, as well as of their own financial weakness, looked to Great Britain for aid, on the ground that the work would be in the imperial interest. In Nova Scotia attention was concentrated on the project by the activity of Joseph Howe, whose name is inseparably connected with the early railway history of the Maritime Provinces.

About this period the writings of Edward Gibbon Wakefield were attracting the attention of England to the advantages of colonization as a remedial measure for social discontent. The current of thought was directed to the project of developing the British North American colonies through a comprehensive system of colonization. In 1847 a select committee of the House of Lords considered the matter in connection with the question of emigration from Ireland. It was the opinion of witnesses before the committee that the construction of public works and means of communication in the colonies would lead to their rapid development. Earl Grey was of opinion that if the imperial government desired to aid in the development of the colonies, the best way to accomplish this would be by the construction of railways. The interest of the imperial authorities had been shown in 1846 by a grant of £50,000 to aid in building houses for immigrants. This, however, was countermanded in January 1847. The advantages of the Halifax and Quebec called forth many pamphlets, one of the most interesting of which was published in 1848, in which Captain Laws advocated a combination of railway construction and settlement. It was suggested that the imperial government should issue £5,000,000 of exchequer bills to be applied to the construction of a railway from Halifax to Quebec. The provinces were to be pledged to pay interest at four per cent on this loan, as well as to repay the principal in fifteen years, the imperial government being in the meantime secured by a first mortgage. As an aid to colonization the colonies were to be required to give immediate employment to thirty able-bodied men, and their families, per mile of railway. While the primary argument in favour of the enterprise was that of

imperial advantage, there were not wanting those who claimed that, in spite of the competition of American railways, it would bring the trade of the Western States to Halifax. It was soberly contended that a more friendly feeling existed between British America and the Western States than between it and the Eastern States, and that this would aid to divert traffic to the Canadian railway.

The colonies thought that the fruition of their desire was near at hand. Major Robinson had reported favourably on the commercial future of the railway. But the project met an obstacle in 1849, when the imperial commissioners of railways, remote from the enthusiasm of the colonies, held that while the railway might be justifiable from a political and military standpoint, its commercial future was at best doubtful ; they thought that western traffic would prefer the direct route from Montreal to Portland.

Notwithstanding this rebuff, the colonies redoubled their activity. If the motherland would undertake the construction, then each province pledged itself to guarantee the payment of £20,000 per annum towards making up any deficiency between the earnings of the railway and the sum necessary to meet fixed charges. The provinces also offered to give a right of way, the lands necessary for stations and terminals, and in addition a grant of ten miles of land on each side of the railway. Francis Hincks, inspector-general of the Canadas, stated that the necessary funds could be obtained only through the instrumentality of the imperial authorities, and that it was highly desirable that the road should be constructed by the officers of the imperial government and entirely under its control. It was suggested that in order to raise a fund to meet the interest on the necessary capital, the imperial government, instead of reducing the duty on foreign timber, a change then under contemplation, should raise the duty on Canadian timber from one shilling to seven shillings and sixpence per load. This suggestion was also approved of by New Brunswick. The imperial government, however, stated in 1850 that the Treasury was not in such a position as to warrant a grant.

The situation was now complicated by the project known

as the European and North American Railway, which had already been engaging attention for some years. This projected line was intended to link up Portland, Maine, with Nova Scotia. In 1850 Howe had shown his favour to this enterprise by moving, at a public meeting in Halifax, a resolution that the government of Nova Scotia should construct the part of this line which would fall within the boundaries of the province. Apparently he favoured this part of the project simply because it would be a step towards the accomplishment of the Halifax and Quebec project. The government of Nova Scotia found, however, that the imperial government was unwilling to guarantee the interest on the £800,000 necessary for the construction of this line.

In 1851 Howe, who was especially interested in the portion of the line lying within Nova Scotia, went to England to attempt to obtain aid. Seldom or never has a more energetic campaign been conducted by one man. Speeches, communications to leading men and newspaper interviews followed in rapid succession. He pointed out the promising openings for British settlers in the colonies on the fertile lands which the railway would open up. In a memorial sent to the home government the mayor and council of Halifax had claimed that the construction of the European and North American line would greatly advance commercial development. Howe admitted that this line would be more cheaply constructed than the Halifax and Quebec, but, quick to feel the veering winds of public opinion, he said he would be opposed to it if it alone was to be constructed. He professed to see lurking behind it a project to bring the Maritime Provinces into the American Union ; for he contended that if Americans were allowed to control its capital, this would increase the sentiment of annexation. More solid were his references to the fact that Great Britain had already, in 1848, guaranteed interest on loans for the construction of public works and railways in the West Indies. As an argument in favour of imperial aid he urged that by means of it the undertaking could be financed much more cheaply. While money was worth six per cent in the United States it could, under an imperial guarantee, be obtained for three and a half per cent.

Apparently the energetic advocacy of Howe had turned the tide, for in 1851 the colonial secretary informed him that the imperial government was prepared to recommend to parliament either a guarantee of interest or an advance of the sum required. But no construction was to be begun in Nova Scotia until arrangements had been made with the other provinces for the building of a through line. The imperial government was prepared to recommend the extending of like assistance to the portions of the line to be constructed in the other provinces. The road was to be wholly on British territory. The right to send troops, mails and military stores at reasonable rates was to be secured. If the aid was granted, the provinces were to pass legislation making the loans they were empowered to raise a first charge on the provincial revenues, after any existing debts and payments on account of the civil lists.

In Canada legislation was passed for the building of a trunk line and the raising of £4,000,000 on the imperial guarantee. Nova Scotia authorized a loan of £1,000,000; and that there might be sufficient revenue to meet any special expenses in connection with the construction of the road, the tariff of 1851 was to remain unchanged until the line earned three and a half per cent. In New Brunswick the condition that all the provincial revenues should be pledged to build the line at the provincial expense was considered unduly onerous. The province said it would adhere to the offers of a money payment of £20,000 for twenty years and a land grant of ten miles on each side of the track, which it had made in the session of 1849-50. The province had already pledged £300,000 in aid of the European and North American, and the Quebec and St Andrews. It was considered that a strict interpretation would, in view of the refusal of Lord Elgin in 1849 and 1850 to undertake the construction of the Halifax and Quebec, on the pledges of aid which the provinces had offered, justify turning their attention to ' the accomplishment of undertakings which it would be in their power to carry out, and which from the prospect of more immediate remuneration would hold out greater inducements to capitalists.'

A convention of delegates from the different provinces was held in Toronto in June 1851 to arrange the details of the project. Contrary to expectation New Brunswick was represented. It was agreed that the line should be built at the joint account and mutual risk of the provinces. A strip of land, ten miles wide, along the railway was to be vested in a joint commission, and the proceeds from the sales of this land were to be appropriated to the payment of the principal and interest of the sum required. New Brunswick was to construct the portion of the Portland line lying within its boundaries with funds advanced by the imperial government; Canada was to complete the road from Quebec to Montreal at its own expense. It was estimated that the main line would cost £7000 per mile.

In the communication from the colonial secretary already referred to it was stated:

> It is also to be understood that Her Majesty's Government will by no means object to its [the Halifax and Quebec line] forming part of the plan which may be determined upon, that it should include a provision for establishing a communication between the proposed railway and the railways of the States. Any deviation from the line, recommended by Major Robinson and Captain Henderson must, however, be subject to the approval of Her Majesty's Government.

This was construed by Howe as extending the imperial guarantee, not only to the Halifax and Quebec Railway, but also to that portion of the European and North American lying within the provinces. The convention at Toronto had so understood it also. New Brunswick, which went into the project unwillingly, would not have entered it at all had it for an instant imagined that any other construction could be placed on the imperial guarantee. Nor had it been understood that the line as selected by Major Robinson was immutable. New Brunswick had hoped that a route by way of the valley of the St John would be chosen. So great was its interest in this that in 1852 it undertook to become responsible for five-twelfths of the cost of this route. It had hoped throughout that the railways it was aiding would, in part at

least, become integral portions of the Halifax and Quebec, thereby affording not only a through route, but local development as well. Canada also favoured this route, but Nova Scotia held to the 'Northern' route as surveyed by Major Robinson.

While the seeming harmony as to the project had cloaked divergent points of view, a sudden difficulty intervened in a dispatch in May 1852 from Sir John Pakington to Lord Elgin. This stated that the original guarantee had not contemplated the extension of a guarantee to the European and North American; that consequently the home government was free to look at this phase of the project from the standpoint of expediency; that aid to this line would not be given; and that the 'Valley' line could not be accepted. It was admitted that from a local and commercial standpoint the 'Valley' route might have advantages over the 'Northern' route, but its proximity to the United States boundary deprived it of those imperial and military advantages which alone would justify the granting of imperial credit.

In 1852 Hincks and Chandler, on behalf of the governments of Canada and New Brunswick, went to England to attempt to enlist support for the 'Valley' route. Howe reluctantly acquiesced in this, fearing that otherwise the Halifax and Quebec project would be jeopardized. However, the application proved unavailing. New Brunswick and Canada, on the one hand, expected commercial advantage from the 'Valley' route; Nova Scotia, on the other hand, hoped that the 'Northern' route would make western traffic subsidiary to Halifax. The limited resources of the provinces and the meagre traffic possibilities of the line had caused the appeal for imperial aid, and imperial considerations now overrode commercial ones, with the result that the provinces were free to turn their attention to projects of more local interest.

The European and North American Project

After the termination of the active interest in the Halifax and Quebec project the two dominating influences in the

railway development of the Maritime Provinces were the European and North American project and the promoting activities of the famous firm of English railway contractors—Peto, Brassey, Jackson and Betts.

The ambitious projects of Portland to become a railway centre superior to Boston have already been indicated in connection with the Atlantic and St Lawrence project. John A. Poor, who was the dominating figure in that project, looked upon it as a link in a larger plan which would make Portland a focal point in the through railway business both of Canada and of the United States. While in 1843 he had advocated a railway through Canada with termini at Montreal and Halifax, the essential part of his plan was a railway through Maine, New Brunswick and Nova Scotia. From the terminus in Nova Scotia a line of steamers was to run direct to Galway, Ireland. It was the intention to develop this as a passenger and mail route ; it being assumed that freight would move by sailing vessels on account of cheaper rates. It was further hoped that the expanding network of the railways of the United States would be so connected with Portland that the through journey between New York and London might be made in seven, or even in six days.

While the more ambitious phase of the project was for the time quiescent because of the activity of Portland in connection with the Atlantic and St Lawrence, the interest in the project of through communication had spread to the Maritime Provinces. In 1848 a line of railway was projected to connect St John, on the Bay of Fundy, with Shediac on the Straits of Northumberland, and a grant of $4000 was made by the province of New Brunswick for the expense of the preliminary survey. In the following year a proposal that the province should take $600,000 of stock in the railway and guarantee six per cent on a sum of $12,000,000 passed the lower house, but was rejected by the council.

In July 1850, through the instrumentality of Poor, a convention of representatives of the New England states and of the British North American colonies was held at Portland. The circular issued calling this convention indi-

cated the commercial advantages of such a trunk line connection. The social and harmonizing influences were also referred to ; and the conviction was expressed that it would 'tend to allay national prejudice, harmonize national differences, contribute to advance the highest interest of humanity and promote the welfare of the race.' It was stated that a liberal grant of land and an exercise of the advantage of the public credit, on the part of New Brunswick, Canada and Nova Scotia, similar to that offered in the case of the Halifax and Quebec, together with the compensation received for the carriage of the English and of the American mails, would tend to attract private capital in sufficient amount to ensure the completion of the undertaking.

In international gatherings participated in by the United States and Canada, it usually happens that in the desire to avoid controversial matters the discussion degenerates into oratorical vapidities. Nor was this convention free from this defect. Oratorical outbursts in the untrammelled style that was popular in the United States in the middle of the nineteenth century and quotations from the Latin poets afforded an insecure basis for raising money. As an example of rhetorical extravagance the following extract from one of the speeches may not be uninteresting :

> In the annals of mankind . . . since the first dawn of civilization, there has not been a spectacle that surpasses in moral and political grandeur—or that ought to surpass in political grandeur—or that ought to surpass in moral and political events, the exhibition which the three memorable days of this convention have made to the world.

The same speaker, piling blasphemous comparison on bad taste, said that even the Crucifixion did not do more to herald peace on earth and good-will to men than the Portland convention.

Notwithstanding this oratorical effervescence, there were some practical conclusions. The route was to be a continuous line of 550 miles from Portland to Halifax—222 miles in Maine, 204 in New Brunswick and 124 in Nova Scotia. The whole was to be under one management, under concurrent

charters of Maine, New Brunswick and Nova Scotia. The road, it was estimated, would cost $12,000,000. The State of Maine and each province was to provide means for the construction of the portions within their respective boundaries, this to be a common stock under a single board of directors. One-half of the capital was to be raised on individual subscriptions; an attempt was to be made to raise the balance on the guarantees of the governments concerned; in addition the British and the American governments were to be applied to for mail contracts.

The State of Maine at once undertook to implement its promises. Provision was made for a survey of the portion of the line in Maine, and a perpetual charter was granted free from all the restrictions ordinarily applying to the railway charters granted by the State.

It is unnecessary to follow the fluctuating fortunes of the portion of the line lying within the State of Maine. The railway policy of Nova Scotia and of New Brunswick centres around this project. In 1851 the engineer who conducted the surveys of the European and North American Railway within New Brunswick stated that there was not sufficient local population and business to warrant construction from St John to the boundary of Maine, but the province passed legislation authorizing a stock subscription and a land grant to the railway. In the course of the negotiations in England concerning the Halifax and Quebec, Chandler, the representative of New Brunswick, finding that aid could not be obtained for the 'Valley' route, entered into negotiations with Peto, Brassey, Jackson and Betts. This firm offered to construct the work either as a private enterprise, taking a stock payment as well as a loan from the government, or as a public work taking at par six per cent long term provincial bonds. Accordingly, under a contract which was ratified at a special session of the legislature in 1852, the contractors undertook to build the 244 miles intervening between the Nova Scotia and the Maine boundaries for £6500 per mile. The province agreed to take £250,000 in stock, paying therefor in provincial six per cent bonds at par; in addition it was to lend £1800 per mile secured by a first mortgage. The

contractors were to see to the floating of the remainder of the capital.

In New Brunswick private ownership was adopted as a matter of expediency. In Nova Scotia, while the pendulum swung back and forth, public ownership was favoured. As early as 1850 Howe advocated government ownership, on the ground that this would be the only efficient means of regulating railway monopoly and providing against manipulation of rates. So important did he consider the railway to be for the development of the country that he, at the same time, said: 'If our Government had means sufficient to build railways, and carry the people free, we believe that this would be sound policy.' In 1852 a minute of council declared in favour of the construction of three hundred miles of railway, the construction to be spread over the period from 1853 to 1862. In the legislation which was passed in the following year to implement this declaration, the preamble sets out the objects in view:

> Whereas the construction and maintenance of a trunk line of railway from the harbour of Halifax to the frontier of New Brunswick with branch lines radiating to the harbour of Pictou and Victoria Beach, will greatly facilitate the internal trade of Nova Scotia, developing her resources, enlarging her revenues and opening communication with the neighbouring States and Provinces.

The line to Pictou was intended to open up the coal-mines, while the line to Windsor and Victoria Beach was intended to make the rich western counties tributary to Halifax. Howe had been an advocate of the latter line for years. It had been constantly before the public. Judge Haliburton, remembered by his 'Sam Slick' papers, had actively advocated it in 1848.

In undertaking these lines the government looked to a combination of public and private credit. The total liability of the province was to be limited to £800,000; the counties through which the lines passed were to be responsible for the right of way and the fencing. When the government was satisfied that contractors of sufficient skill were willing to undertake the construction at a sum not exceeding £4500

per mile, it might undertake to pay two-thirds of the cost. While Howe had been of the opinion that the province should be very careful about entering into any negotiations with the Brassey firm, since he thought that those contractors had overreached both New Brunswick and Canada, it was this company that obtained the contract.

Construction on the European and North American began in 1853 ; but this line was soon involved in difficulties. The contractors had hoped to find no difficulty in placing the bonds of the railway, but the financial stringency interfered with this. In 1856 the contractors stated their willingness to go on with the enterprise if additional temporary aid were given by the government. But the government was unwilling to give this, and it took over the work and paid the contractors £90,000 for the portion that had been completed. In Nova Scotia the railways had encountered difficulties from the outset, and the contractors gave up the enterprise in 1854, with nothing done.

In 1856 New Brunswick made a fruitless attempt to obtain aid from the imperial government for the European and North American. In the same year it passed legislation to provide for the construction of a line from St John to Shediac and from St John to the State of Maine with extensions to Woodstock and Miramichi. Construction was to be carried on by a government commission, the work being let out by tender. The money necessary for construction was to be borrowed on thirty year debentures ; a sinking fund to extinguish this debt at maturity was to be formed from the profits of the railways, together with the proceeds from the sale of the crown lands and timber of the counties through which the line was to pass. However, the provincial finances were in such a condition that the year 1857 passed without even a survey.

As for Nova Scotia, in 1859 the Hon. Charles Tupper said that his government was opposed to government construction, but their hands were tied by circumstances. The cost of construction had been underestimated, the difficulty of obtaining sufficient return was ever present, and he could see but little future for the railways of Nova Scotia aside from

a connection with an intercolonial line. In the following years, both in Nova Scotia and in New Brunswick, government construction broke down in the face of the ever-present difficulty of obtaining money. Complaints were constantly being made regarding the poor service on the lines in Nova Scotia. In 1859 the railway train between Halifax and Truro ran scarcely as fast as a stage-coach, and freight was being handled in the winter by sleighs because the rates were too high. A barrel of fish could be carried by private conveyance for 2s. 6d., while by rail it cost 3s. 3d. During the winter the service of two trains a day was cut down to one. At the same time the lines were barely meeting expenses; money had been raised at six per cent to construct the railway, while the net return was one-half of one per cent on the cost. On the European and North American, in New Brunswick, the net earnings were ·4 of one per cent on the cost.

In New Brunswick the dissatisfaction led to a legislative investigation into the European and North American in 1860. While the management was exonerated by the majority report, the minority report found that there had been careless management and inaccurate surveys.

The project of a through route connected with the State of Maine which had been begotten in oratory and had lingered on in disappointment, had a brief revival in 1863, when the European and North American Railway of Maine proposed to complete the unfinished portion of the railway through New Brunswick and Nova Scotia and operate it on condition that each province would pledge £20,000 a year until the enterprise paid six per cent on the cost. The financial difficulties and a fear of insufficient traffic caused the Hon. S. L. Tilley to rejoin that the proposition was too expensive.

Thus in 1864 the policy of government construction had broken down in both Nova Scotia and New Brunswick, and the provinces found it necessary to rely on private enterprise and the attraction of capital by subsidies. In some instances guarantees of interest were offered, in others payment of cash outright. As a result of these varied activities there were in the Maritime Provinces, in 1867, 341 miles of railway.

In New Brunswick, the European and North American extended from St John to Shediac, a distance of 108 miles ; while the St Andrews and Quebec had been constructed from St Andrews to Richmond, a distance of 88 miles. In Nova Scotia, the Halifax, Truro and Windsor, 93 miles in length, and the Truro and Pictou, which comprised 52 miles, had been opened in 1858 and 1867 respectively.

III

THE CANADAS

Railway Policy of Francis Hincks

UPON Francis Hincks, inspector-general, devolved, after the Union of 1841, the task of preparing a general policy of railway aid. The essential features of his policy were the enactment of the Guarantee Act, the incorporation of the Grand Trunk Railway, and the creating of the Municipal Loan Fund.

The preamble to the Guarantee Act of 1849 recited the importance of rapid and easy means of communication, and stated that in new and thinly peopled countries in which capital is scarce ' the assistance of Government is necessary, and may be safely afforded to the construction of lines of railway of considerable extent.' The assistance was to be granted by guaranteeing interest at six per cent on a sum not exceeding one-half the bonded debt, in each case, of a railway which was over seventy-five miles in length, and one-half of which had been constructed. Any payments of interest by the government were to be secured by a first charge after the lien of the bondholders. No dividends were to be paid while any part of the principal on which interest had been guaranteed was outstanding, until the repayment of such principal had been secured by the establishment of a sinking fund. The roads thus assisted were to be subject to such further legislation as might be passed to make the act effective.

The policy adopted was a modification of that provided for the Great Western in 1837, whereby Upper Canada had undertaken to vote that railway £3 for every £1 of private stock subscribed up to £200,000. It was claimed by the Great Western that it was on its representations that the Guarantee Act was passed.

The Great Western Railway, originally known as the London and Gore, had been incorporated in 1834. The troubled days of the rebellion prevented it making any progress, but the importance of its route as a link in the through connection between the Eastern and the Western States was early recognized. Casey, who was later chief engineer of the Atlantic and St Lawrence, stated in a memorial written in 1837 that it had a route which no competition could affect, and that it would exercise as important an influence on travel as did the Erie Canal. The charter lapsed, but was revived in 1845. Hamilton, which had by this later date become the eastern terminus of the projected road, was convinced that it would not only develop the internal trade of Canada, but would also form a connecting link between Boston and the Mississippi River. Hudson, at this time the greatest railway speculator in England, became interested in the project. It was favourably reviewed by the English railway papers. Sir Allan MacNab, who was then speaker of the house, went to England to endeavour to raise £1,200,000, but the disturbed financial conditions and the reverses which Hudson had undergone made his journey a fruitless one. In 1847 the directorate of the road, in a letter signed by MacNab, endeavoured to turn the existing depression in Great Britain and Ireland to the railway's advantage. They set forth that emigration from Ireland and Scotland should be connected with the development of internal improvements in Canada. The Great Western line was intended to run from Hamilton to London with branches from the latter point to Windsor, Sarnia and Goderich. It was therefore suggested that the imperial government should lend money at a low rate of interest in aid of the railway ; the railway to undertake to find employment for emigrants on the railway work, and provide for their transportation to Canada.

In the years 1847 and 1848 active attempts were made to raise capital. There were constant references to the profitable business carried on by the railways in the Eastern States. The Great Western was said to be 'the unfinished link in the greatest continuous chain of railway communication in the world.' Ground was broken at London on October 23, 1847, but nothing further was accomplished.

The interest in western connections was general. In 1845 the Hamilton and Goderich was advocated on the ground that it would give a rail journey of 100 miles as against a lake journey of 460 miles. In June of the same year the prospectus of the Ontario and Huron Junction Railway, later known as the Toronto and Lake Huron, was launched in England. This line, which was projected to run from Toronto to Goderich, had the support of the Canada Company, which had already spent £16,000 on the improvement of the harbour of Goderich. It was hoped that it would build up a transit trade between the Eastern and Western States. Nine out of sixteen of its provisional directors were Canadians. MacNab made an unsuccessful attempt to raise capital for the Toronto and Lake Huron in England.

Between 1834 and 1850 there had been chartered in Upper Canada seventeen railways with a capital stock of £5,600,000, while in Lower Canada the same number of railways had been chartered, but with a capital stock of £7,200,000. The poor development compared with the lavish chartering caused Smith, the author of *Canada Past, Present and Future*, to say in 1850 :

> To advocate the construction of a railroad in Canada at the present time is rather hazardous. A man who does so must be well convinced of the feasibility of the plan he proposes, and see clearly the means of carrying out the object. So many abortive attempts have been made, particularly from Toronto, that the public have long since lost all confidence in the undertaking.

A proposal for a railway from Montreal to the western boundary of Canada was made in 1830 by Peter Fleming, C.E.

Fifteen years later, in September 1845, at a public meeting in Belleville, the construction of a line between Kingston and Toronto was advocated. This, it was claimed, would not only afford an outlet for agricultural products and open up the ore deposits of Hastings County, but would also be a link in a line between the East and the West. Both in Belleville and Kingston there was an evident desire to obtain a connection via Kingston with the railways in New York State. In the following year the project of the Kingston and Montreal Railway was brought before the public. Through the activity of the Lachine Railway Company, which hoped to make its line a link in a through connection, the project of a trunk line was actively discussed in Montreal in 1849. On February 16 of that year a 'meeting of Gentlemen favourable to the extension of railway projects' was held at Donegana's hotel, at which a resolution was adopted in favour of a railway from Quebec to the western boundary of Canada. The line was to be built by the existing companies, and the government was to lend two-thirds of the money necessary for the construction of any section of the line when the company building such section had expended on the construction of its section one-third of the cost.

When Canada in 1851 undertook, in connection with the Halifax and Quebec project, to make provision for a trunk line, it was one from Quebec to Hamilton which it had in mind. A loan of £4,000,000 was to be raised, and the work of construction was to be carried on by a board of railway commissioners. The project met with much opposition in parliament. It was urged that the expenditure involved was so large that the sanction of the electors should be obtained before anything was done. Government construction and management were attacked as inexpedient, having always resulted either in public loss or in a total failure to produce the anticipated benefits, as witness the contemporary experiences of Michigan. The portion of the line through Eastern Canada to connect with the Halifax and Quebec was criticized as simply a device to appease the French voters.

In 1851 the Great Western began active construction, and

soon enlisted in the United States a financial support that exercised an important effect upon its traffic policy. The appreciation of the strategic position which this line occupied, its necessity as a western outlet for the New York State lines which centred at Buffalo, and the financial straits of the line itself, led, on May 5, 1851, to a meeting at Niagara Falls of representatives of American railways who were interested in the future traffic of the road. It was stated that the speedy completion of the Great Western from the Niagara River to Detroit was 'highly important, forming as it does a *necessary link* in the Great Trunk Railway from the Atlantic to the Mississippi which will not only be the shortest route, but more level in grades and straight in linear arrangement than any other trunk line can be made for the same route of travel.' And it was further stated that 'no line of road . . . [is] so well adapted in every particular to the carrying trade between the Atlantic and the growing millions of the North-West.' A committee was appointed at this meeting to obtain subscriptions in aid of the enterprise. Eight thousand shares were now taken up by Erastus Corning of Albany, John M. Forbes of Boston and J. W. Brooks of Detroit, acting on behalf of the American lines; and these men were now added to the directorate.

The chartering of the Grand Trunk in 1852 marks the real beginning of the period of railway construction. Hincks, who had accompanied Chandler of New Brunswick to England to press the merits of the 'Valley' route, came in contact in London with the Brassey firm, which had already been attracted by the colonies as a field for railway construction. This firm was even then entering into negotiations for the construction of the Quebec and Richmond Railway. As has been seen, one of the early surveys in connection with the ambitious railway projects of Maine had looked to Quebec as a terminal point in Canada. The people of Quebec were satisfied that there was a great necessity for direct, rapid and cheap means of communication between Quebec, Montreal, the Eastern Townships, Canada West and the United States. The activity of Montreal in connection with the Atlantic and St Lawrence again revived interest, and a

charter had been obtained in 1851 for a railway from Quebec to Richmond, as it was feared that without a connection with the Atlantic and St Lawrence traffic would be diverted from Quebec.

In the matter of railway policy Hincks was an opportunist. When the Guarantee Act of 1849 was introduced, what he had in mind was not the creation of a trunk line, but the extension of aid to local lines. The legislation passed in 1851 had considered that private construction was to be used only as a last resort. In a speech delivered at Halifax, in the course of the Halifax and Quebec Railway negotiations, Hincks had declared as his settled conviction that ' to make railroads by companies in this country was both impossible and impolitic.' It was the apparent impossibility of attracting private capital rather than settled belief in government ownership, as in the case of Howe, which led to this statement. Hincks now entered into negotiations with the Brassey company for the construction of the road, justifying this change of front by saying that he had reason to believe that an agreement with a company would inspire confidence and secure the support of capitalists.

The general legislation under which the Grand Trunk was chartered is contained in three acts. The first of these provided for the construction of a railway from Toronto to Montreal. The capital of the company was placed at £3,000,000, and provision for a government loan of £3000 per mile was made. Among the names of the twenty-six incorporators of the railway are to be found those of Peter M^{c}Gill, Georges Étienne Cartier, L. H. Holton, D. L. Macpherson and A. T. Galt. Of the eighteen directors of the road nine were to be appointed by the government. These government appointees were not required to hold any share qualifications. The railway was subject to the provisions of the general railway act. The second of the acts provided for the continuation of the railway from Quebec to Trois Pistoles, and, under certain conditions, from thence to the eastern boundary of the province. While the capital stock was placed at £100,000, provision was made for increasing it to £1,000,000. The provincial grant of £3000 per mile was to

apply on the section between Quebec and Trois Pistoles. For the extension beyond the latter point there was to be a land subsidy of 1,000,000 acres. The third act in the series dealt with the charters already granted in 1851 to the Montreal and Kingston, and Kingston and Toronto Railways. These lines had objected to the Grand Trunk legislation as an interference with their charter rights. They stated that to commit the construction of the line to a Canadian company would be more to the interests of Canada than to place it in the hands of a foreign company managed by any association of speculators living abroad and having no interest in the country beyond the punctual receipt of the largest dividends that could be forced out of it. The Montreal and Kingston had called in, and received payment of, £60,000 of its stock. The stock of these roads was controlled by A. T. Galt, L. H. Holton and D. L. Macpherson. Notwithstanding the protests of these companies, it was now provided that their charters were to be repealed and the Grand Trunk was to reimburse the expenditures they had made.

In 1851, on the advice of the Canadian financial agents in London, it was decided to restrict the scope of the Guarantee Act, as it was feared that without restriction it would impose too heavy a burden on the public credit. Accordingly the guarantee was limited to the Great Western and the St Lawrence and Atlantic, which were to form part of the trunk line as proposed in 1851, in the event of government construction failing; and to the Ontario, Simcoe and Huron, later known as the Northern, which had been begun on the faith of the guarantee. It was further provided that the government might advance one-half of the principal as well.

Under the Municipal Act of Upper Canada, passed in 1849, municipalities were empowered to take stock in, or lend to, road or bridge companies. The legislation of the same year to authorize the formation of joint stock companies 'for the construction of roads and other works in Upper Canada' contained an identical provision as to municipal contributions. In 1850 the Great Western obtained an amendment to its charter permitting municipal subscriptions. By June 1851 it had received stock subscriptions of £25,000 each from the

counties of Oxford and Middlesex and from the towns of Galt and London, as well as £100,000 from Hamilton. The general railway act of 1851 had authorized municipalities to subscribe for stock in, or lend money to, railway companies, and had further provided that the head of a municipality subscribing £5000 was to be *ex officio* director of the railway. The main trunk line legislation of 1851 had provided that in the event of an imperial guarantee not being forthcoming, the line might be constructed at the joint expense of the province and of the municipalities. The sums raised by the municipalities were to be known as the Railway Municipal Subscription Fund, and debentures might be issued by the province against the security of this fund. If a municipality defaulted in its obligations, the government might direct the sheriff of the municipality to levy against it.

In 1852 the Municipal Loan Fund Act organized and expanded the methods of municipal assistance. It was thought that the world's lack of knowledge of the financial condition of the municipalities prevented their securities from receiving the standing they deserved. Each municipality was now authorized to raise money on debentures for aid either to railways or to canals, harbours and macadamized, gravelled or plank roads. When the debentures had received proper sanction they were subject to the approval of the governor in council. When this had been done the debentures so sanctioned constituted the basis of the Municipal Loan Fund, which was in reality a pooling of local credit. Against this fund the receiver-general was authorized to issue such provincial debentures as were necessary for the improvements desired; and from the money obtained from such provincial debentures the municipalities might take stock in, or make loans to, works considered of public necessity. The receiver-general might also, at the discretion of the government, make advances to the fund to meet the charges on it. To redeem its obligations at maturity each municipality was required to contribute to a sinking fund. When a municipality fell behind in its payments, it was to be charged interest. Further, the government in case of continued default might levy through the sheriff of the municipality.

While the government specifically stated that it assumed no financial obligation, this complicated scheme was intended to reflect the advantage of provincial credit on local issues. Its position of management and supervision tended to confuse the investor as to the relation of the government to the fund.

Railway Expansion in the Canadas

Between 1841 and 1851 the population of Upper Canada increased from 465,000 to 952,000 ; while in Lower Canada the increase was from 690,000 to 890,000. The good harvest of 1850 had helped to dissipate the gloomy anticipations of the signers of the annexation manifesto. The repeal of the navigation laws instead of driving trade away from Canada had attracted it ; and the harbours of Montreal and of Quebec were crowded with foreign shipping. In 1841 the total imports at Quebec were £2,690,000 ; in 1851 they were £5,358,000. The changed policy of England, which gave Canada a free hand in its commerce with the United States, increased the imports from that country from $4,200,000 in 1849 to $8,360,000 in 1851.

The prospectus of the Grand Trunk was issued in London early in 1853. It was unfortunate for the ultimate credit of the enterprise that the contracting firm occupied the dual capacity of contractor and promoter. The Quebec and Richmond in which they were interested was to form part of the projected Grand Trunk. There was also included in it as a possible connection the European and North American of Maine, for the construction of which the Brassey firm was negotiating and the contract for which was awarded them a few months later, the greatest part of the consideration being in the stock and bonds of the railway company.

The project as laid before the investor involved the construction and operating of 1212 miles of railway, distributed as follows :

Sarnia and Toronto	172	miles
Toronto and Montreal . . .	345	,,
St Lawrence Bridge	2	,,

St Lawrence and Atlantic . .	140 miles
Quebec and Richmond . . .	100 ,,
Quebec and Trois Pistoles . .	253 ,,
Peterborough Branch . . .	50 ,,
Atlantic and St Lawrence (leased) .	150 ,,
Total . .	1212 miles

The total capital was £9,500,000. From this were to be deducted sums already spent on the St Lawrence and Atlantic, and the Quebec and Richmond, as well as shares and debentures set aside for the shareholders of these lines, and for the bondholders of the Ontario, Simcoe and Huron amounting to £2,254,000, thus leaving £7,246,000 available for issue. This was to be divided equally between shares and debentures. It was proposed to issue one-half the shares and one-half the debentures. The debentures were convertible into the government six per cent twenty year bonds to be issued under the terms of the government loan.

In view of the later fortunes of the work the summary of the advantages claimed for it may be quoted *in extenso* :

> (1) The completeness of the system of Railway, engrossing as it does the traffic of Canada and the State of Maine and precluding injurious competition ; (2) the large amount of Government Guarantee and of Canadian capital invested, being two millions eight hundred thousand pounds sterling ; (3) the fact that two hundred and fifty miles of the Railway are now open for traffic —to be increased to 390 miles by the close of the present year ; (4) the execution of the whole of the remaining works being in the hands of the most experienced contractors, the eminent English firm of Messrs Peto, Brassey, Betts and Jackson having undertaken six-sevenths thereof, including the St Lawrence Bridge ; (5) the cost of the railway being actually defined by the contracts already made, whereby any apprehension of the capital being found insufficient is removed.

The fallacious estimate of revenue which led to many bitter attacks on the good faith of the government should also be quoted in its entirety :

Summary of probable revenue on 1212 miles at an average of about £25 per mile . .	£1,479,660	
Deduct working expenses 40 per cent	591,864	
		£887,796
Interest on debentures debt, £4,635,200	278,100	
Rental of Atlantic and St Lawrence Railway . . .	60,000	
		338,100
		£549,696

Thus showing a profit on the share capital of £484,800, or nearly 11½ per cent.

In the list of directors in England were included the names of Baring and Glyn, the Canadian financial agents, who appear as directors on behalf of the Canadian government. The official sanction of the government was apparently given to the enterprise, for six out of the twelve Canadian directors had an official connection with the government of the day. These were : John Ross, solicitor-general for Upper Canada and president of the company ; Francis Hincks, inspector-general ; Étienne P. Taché, receiver-general ; James Morris, postmaster-general ; Malcolm Cameron, president of the executive council ; René Edouard Caron, speaker of the legislative council.

So much stress was laid on the descriptive statements of the prospectus, both at the time of its issue and in later years, that these statements should be carefully remembered. So uniformly enthusiastic is the language used that it is difficult to select outstanding passages. There are no shadows ; everything is in a dazzling light. A modern real estate prospectus is restrained in comparison. The work was offered as the ' most comprehensive system of railway in the world. Protected from the possibility of injurious competition for nearly its entire length by natural causes as well as by legislative enactment, it engrosses the traffic of a region extending 809 miles in one direct line from Portland to Lake

Huron, containing a population of nearly three millions in Canada, Vermont, New Hampshire and Maine.'

In substance the estimates of prospective traffic were framed on the easy basis of calculating every ton of traffic in the Canadas and the Maritime Provinces as well as every ton moving between the Eastern and the Western States as being within the sphere of influence of the Grand Trunk.

> At Sarnia, the American railroads now in course of construction place the Grand Trunk line in the most direct communication with the arterial lines of the Great West and the Mississippi, a region whose advance in wealth and population has been regarded as almost fabulous, and yet whose resources are still very partially developed, while the traffic of the copper and iron districts of Lake Superior, the most valuable and extensive in the world, with the coal of Michigan, will accumulate on the railways at this point, reaching Ocean navigation at Montreal in much less time and by the same mileage that it can now pass by boat to the waters of Lake Ontario 350 miles above that city.

And as if this were not sufficient there follows the triumphant summary :

> The Grand Trunk Railway of Canada, it will therefore be seen, commencing at the *débouchure* of the three largest lakes in the world, pours the accumulating traffic in one unbroken line throughout the entire length of Canada into the St Lawrence at Montreal and Quebec, on which it rests at the north, while on the south it reaches the magnificent harbours of Portland and St John on the open ocean. The whole future traffic between the western regions and the east, including Lower Canada, parts of the States of Vermont and New Hampshire, and the Provinces of New Brunswick, Nova Scotia, Prince Edward's Island, and Newfoundland must, therefore, pass over the Grand Trunk Railway.

The actual railway situation at the beginning of 1853, the first year of the great railway development, is set out in the following table :

Name of railway	Miles completed	Miles under construction	Miles projected	Total
Buffalo and Goderich—				
Buffalo to Brantford	...	75	...	75
Brantford to Stratford	...	...	40	40
Stratford to Goderich	...	...	43	43
Champlain and St Lawrence	43	...	...	43
Erie and Ontario—				
Niagara to Chippawa	...	...	20	20
Grand Junction—				
Peterborough to Belleville	...	...	50	50
„ „ Gloucester Bay	...	...	60	60
„ „ Toronto	...	...	75	75
Grand Trunk—				
Quebec and Trois Pistoles	...	...	145	145
Montreal and Kingston	...	...	170	170
Kingston to Toronto	...	...	165	165
Great Western—				
Hamilton to London	...	76	...	76
London to Detroit	...	104	...	104
Hamilton to Niagara River	...	42	...	42
London to Sarnia	...	...	60	60
Junction to Galt	...	13	...	13
Galt to Guelph	...	...	16	16
Montreal and Lachine	8	...	...	8
„ „ New York	32	...	...	32
Ontario, Simcoe and Huron—				
Toronto to Lake Huron	27	66	...	93
Peterborough and Port Hope	...	...	27	27
„ „ Cobourg	...	...	30	30
Prescott and Bytown	...	54	...	54
Quebec and Richmond	...	90	...	90
Rawdon and Industry	...	20	...	20
St Lawrence and Atlantic	95	31	...	126
Toronto and Hamilton	...	...	40	40
Toronto to Sarnia—				
Toronto to Guelph	...	47	...	47
Guelph to Stratford	...	...	40	40
Stratford to Sarnia	...	...	75	75
Total	205	618	1056	1879

In granting charters and in devising schemes whereby railway construction might be facilitated, Upper Canada was throughout this period pre-eminent. Whatever construction was undertaken in Lower Canada was more local in its nature. It was not until 1854 that the provisions of the Municipal Loan Fund were extended to Lower Canada. Those interested in railway projection in Lower Canada complained of

the existing apathy. From time to time references were made to the enterprise shown by Upper Canada and the benefits which might be obtained therefrom. Although, for example, the people of Lower Canada were admonished by the promoters of the St Lawrence and Ottawa Grand Junction Railway that 'the essence of a railway system is to increase its own traffic, adding twenty-five per cent to the value of every farm within fifty miles of the track, doubling that of those near it and quadrupling that of those through which they pass,' they progressed slowly in the matter of railway construction, with the result that when a time of reverses came they were not so severely injured. In Upper Canada, on the other hand, the rule was lavish chartering, little care being taken to prevent reduplication of lines or waste of capital. In 1853 charters were granted to the Peterborough and Port Hope Railway, and to the Cobourg and Peterborough. As the towns of Cobourg and Port Hope were only some seven miles apart, there was not sufficient business for both lines. It was simply a case of both points bidding for the business of Peterborough. The legislature avoided the danger of arousing local opposition, and so granted charters to both lines, letting the prospective investor look out for himself.

Mild as were the restrictions imposed by the necessity of obtaining a special charter, even these did not apply in the case of one railway. In 1849 an act to authorize the creation of road companies had been passed; the provisions of this act were amended in 1850 so as to apply to railways. This made the procedure necessary to obtain a charter practically identical with that of the general railway law of New York; that is to say, on complying with certain requirements a charter might be obtained without a special act of parliament. In 1851 the Buffalo, Brantford and Goderich, later known as the Buffalo and Lake Huron, obtained a charter under this law. This enterprise was promoted by residents of Buffalo who desired to tap the traffic of the western peninsula of Canada. While this legislation, so far as it affected railways, was repealed in 1851, the desire for increased competition led, in 1855, to a movement for a general railway law analogous to that of New York.

As soon as the Grand Trunk was under way the directors of the company endeavoured to incorporate other railways with it. Not only was there a desire to make additional territory tributary to it; there was also the desire of the contractors to link up with the enterprise other railways in which they were interested. Thus we find William Jackson, of the contracting firm, writing to Hincks on September 23, 1853, endeavouring to enlist the financial aid of Canada in support of an extension from Trois Pistoles to connect with the railways in New Brunswick and Nova Scotia. While he recognized the commercial advantage to the Grand Trunk of Portland as an ocean terminus, he fell back on imperial sentiment, commercial advantage being lacking, and stated that 'we have a strong desire to see the North American colonies connected together by a railway through their own territories, terminating at Halifax.' He said that Nova Scotia and New Brunswick might be looked to for a subsidy of £20,000 sterling each for as long a period as would purchase three and a half per cent terminable annuities. If Canada would vote £30,000 sterling per annum, the imperial government would, he thought, vote a similar amount as well as extend a guarantee.

The prospectus of the railway had spoken of the advantage of a western connection which would enable it to share in the transportation of the breadstuffs of the Western States. In April 1853 an agreement was entered into between the Grand Trunk, the Quebec and Richmond, the St Lawrence and Atlantic, the Grand Junction, and the Toronto and Guelph, the amalgamated line being known as the Grand Trunk Railway of Canada. The guarantee these lines had enjoyed was transferred to the amalgamated company, and was limited to £2,211,500. The arrangements in connection with the Toronto and Guelph at once provoked a conflict between the Grand Trunk and the Great Western.

Between 1835 and 1840 the Great Western had from time to time spoken of building branches to Sarnia, Windsor and Goderich. In the main trunk line legislation of 1851, which provided for the construction of the road by existing companies in the event of government construction being impos-

sible, the road that the Great Western was authorized to construct from the Niagara River to Detroit was specifically recognized as part of the main trunk. Again, when in 1852 the company was empowered to build from Hamilton to Toronto, this portion of the railway was stated to be part of the main trunk line.

In its prospectus the Grand Trunk spoke of the Great Western as affording a communication with the southern part of Western Canada, as well as with the railways from Detroit to the Western States. It also spoke of the excellent financial standing of this road, and said: 'This line in itself forms a continuation of the Trunk line, although under a different company.'

So far, then, as the legislation up to this date was concerned, the Great Western had a right to regard itself as an integral portion of any through route to be developed. The charter of the Toronto and Guelph line had been granted in 1851. One year later a charter was granted to the Grand Trunk, and in the same year provision was made for the extension of the Toronto and Guelph to Sarnia. The Great Western had strongly opposed this extension on the ground that it interfered with its vested rights. This position was supported by the railway committee of the legislature, which resolved that:

> In the opinion of this committee, it would be unjust and impolitic to grant a competing line with the Great Western, such as that asked by the Toronto and Guelph in the proposed extension of their line from Guelph to Sarnia, there having been no evidence adduced to this committee to show that there would be more business than one line could do; that the province having taken interest to the extent of one half of the cost of the road now chartered (being upwards of £750,000) that interest as well as the interest of the individual stockholders should be protected. This committee are of opinion that the extension of the Toronto and Guelph should not be granted.

This sane protest was disregarded, the government taking the position that the question was an open one.

The original idea of Hincks had not included the western extension. At the same time the Grand Trunk, desiring to build up an inclusive system which would control practically all the traffic, and redress, by participation in the richer traffic west of Toronto, the poorer traffic east, forced the extension. It was the needs of the Grand Trunk, not the traffic necessities of the country, which brought about the extension to Sarnia. There was no industrial need for two through lines west of Toronto. Moreover, in the competition for American traffic, the Great Western at Windsor was in a better position than the Grand Trunk at Sarnia. The Grand Trunk contended that since the guarantees to the Great Western were given under a general guarantee act, it was no breach of faith to grant aid to other companies. But, while there was power to modify existing laws, the Great Western had, at least, the right to expect that expediency would protect it, and that the government would not give unnecessary aid.

The Great Western had some reason to see in the Sarnia extension a threat to force amalgamation. As a matter of fact, an arrangement was arrived at between the two companies in May 1853, whereby they undertook to co-operate against injurious competition and unitedly to oppose competing schemes. Robert Stephenson, in an attempt to facilitate a working arrangement, suggested that Canadian territory should be laid out for railway purposes by a disinterested board of railway commissioners. Hincks, however, refused to be a party to such an arrangement ; he desired open competition both in charters and in railroading. He threw himself unreservedly on the side of the Grand Trunk, professing to believe that, notwithstanding the great preponderance of English capital in the Great Western, its opposition to the Grand Trunk extension was due to American influence. The result was that the Great Western, being forced to fight for its own hand, came into closer relationships with its American connections.

Favourable commercial conditions gave Canada a good standing in the money market. The Canadian six per cents were quoted at 116 in London. In 1854 there was a surplus of £1,000,000 currency. The enthusiastic prophecies of the

framers of prospectuses were attracting capital. Robert Stephenson, who visited Canada in 1853, said that he believed that the Grand Trunk offered the certainty of a great traffic. The Grand Trunk, in anticipating eleven and a half per cent of a return, was not alone in its expectations of high dividends on Canadian railway enterprises. In 1847 the Great Western had been of opinion that it would earn fifteen per cent. Its optimism increased with years. In 1853 Mr Laing, the chairman of the railway, hinted at a dividend of twenty per cent. So great was the confidence in the Grand Trunk, and so auspicious were the conditions under which the scheme was launched, that when the first half of the stock was placed on the market it was oversubscribed, and quotations were made at two per cent premium.

Such was the enthusiasm for railway construction that Sir Allan MacNab, who came into office as prime minister in the MacNab-Morin ministry in 1854, said his platform was 'railways.' The money which railway building added to circulation engendered a speculative development. Between 1853 and 1857 the amount of £15,000,000 currency was expended in the country. There was active land speculation along the lines of the Grand Trunk and the Great Western in the western peninsula. Towns and villages were projected. At auction sales building lots were sold at prices which fostered the hope of speculative profit. Speculation in town sites was the same then as now.

The promoters saw in railway charters a ready way to sudden wealth. Charters, not railways, were desired by them. Contests between the Grand Trunk and the Great Western lined the legislators up as partisans of one or other road ; and the suspicion of partiality and corruption in the granting of railway charters was one of the reasons behind the movement in 1855 for a general railway law analogous to that of New York State. The modern devices of lobbying and all the illicit acts thereto pertaining existed in full force at this early time. It was asserted that some members of the government stood in a suspiciously close relationship to the railways. Hincks was assailed ; it was stated that £50,000 of Grand Trunk stock stood in his name on the books of the company

without any tangible equivalent therefor being apparent. However, it was clearly shown that the shares were in reality held by him in trust for future sale by the company in Canada.

In 1857 a parliamentary committee disclosed a scandalous trafficking in a railway charter. The Woodstock and Lake Huron Railway and Harbour Co. had been projected in 1847 with a capital of £250,000, but was dormant until 1852. In this year agents were employed by the directors to canvass for municipal aid. It was represented that all the stock had been taken by responsible parties who were willing to allow the municipalities to participate, and that none of the money so sought would be expended until the means for the completion of the work were available. On the strength of these representations municipal aid to the extent of £145,000 was obtained. In reality the only sums paid in by the stockholders were such as were requisite to qualify the directors. In suits which arose over the election of directors the legal expenses were paid out of the municipal subscriptions. It was further found that, in one case where a municipal officer, uncertain as to the good faith of the directors, was unwilling to give the necessary papers to enable the company to obtain government debentures which would represent the subscriptions of his municipality, a bribe of £200 had been sent in a sealed envelope. Bribes were also paid to remove unfriendly directors.

The hectic rush of railway promotion and construction soon brought its penalty. The Grand Trunk, which began in 1853, soon found itself in difficulties. Speculative development caused wages to increase forty per cent in the year 1853-54, and labour was scarce. Brassey found that where he had paid 5s. a day in England, he had to pay 7s. 6d. in Canada. Grand Trunk stock fell to seven and a half per cent discount on October 14, 1854. In the autumn of 1853 the company, fearing the outbreak of a European war, had already obtained a modification of the financial arrangements whereby the company's debentures were convertible on easier terms into the provincial bonds which were issued in aid of the railway. The company had set aside £837,600 of shares and debentures to be disposed of in Canada. These were not

taken up, and the depressed condition of the London money market prevented their sale except at a discount. The government was asked for aid, and in 1855 made a loan to the railway of £900,000, secured by a lien on the consolidated system of the Grand Trunk. In 1856 the company was permitted to issue £2,000,000 of preferential bonds, and thus postpone the government's prior lien. The province agreed to meet, for a period of five years, the interest on the bonds already advanced to the railway. The company was not able to continue its construction, and the main line was opened in October 1856. The extension westward to Sarnia was completed in November 1859; while the extension eastward to Rivière du Loup was completed in July 1860.

The condition in 1860, when the railway construction practically stopped, may now be compared with that existing in 1853,[1] when the railway development began. The following table shows the completed mileage in 1860:

Brockville and Ottawa	47·5
Berlin Branch	11
Buffalo and Lake Huron	157
Carillon and Grenville	12·5
Cobourg and Peterborough	28·3
Erie and Ontario	17
Galt and Guelph	16
Grand Trunk	850
Great Western	331
Industry Village	12
London and Port Stanley	24
Montreal and Champlain	49
Montreal and New York	45
Northern	96·6
Ottawa and Prescott	54
Port Dalhousie and Thorold	5
Port Hope, Lindsay and Beaverton	43
Rawdon and Industry	16
Standstead, Shefford and Chambly	55
Welland	25
Total	1894·9

[1] See p. 403.

The immediate effect of the cessation of construction was disastrous. The payments made by the railway contractors had habituated people to a free flow of money ; there now came a restriction. At the same time the province had been rapidly increasing its expenditures. In 1854 there had been a surplus of two million dollars ; in 1858 there was a deficit of two and a half millions. Lavish expenditure on railway enterprise had masked the signs of trouble. In 1854 the passenger traffic of the railways had fallen off on account of the cholera. In 1855, 16,000 fewer emigrants arrived in Quebec than during the preceding year. In the same year there was an almost complete paralysis of the lumber trade. By 1856 Brassey admitted to the English stockholders of the Grand Trunk that the impression was gaining ground that the advantages of the road had been overestimated, and that there was little immediate prospect of a dividend—a condition which would be serious to the contractors and others. In 1857 the harvest was an almost complete failure. The local troubles were intensified by the wider commercial crisis which began in September 1857.

Railway construction had been much more expensive than was anticipated. The speculative conditions which the railway building engendered had raised wages and prices. In Upper Canada, where construction was most active, wages were from thirty per cent to fifty per cent higher than in Lower Canada. As a consequence of this, sub-contractors who had tendered for sections of railways in a less speculative period found that their estimates would not afford them any profit ; they, therefore, threw up their contracts, and the sections had to be re-let at advanced prices. The Crimean War had disturbed finances. Where formerly money could be obtained at two per cent, during the war period it cost seven per cent.

In the discussion in England concerning the Grand Trunk Railway it had been urged that its solidity of construction would be so superior to the cheap construction of the American railways that it could be operated at from thirty-five per cent to forty per cent of the gross earnings. The Great Western, which had been built by American contractors, had

been 'scamped.' In the survey of the line more attention was devoted to obtaining an inexpensive right of way than to traversing good traffic country. In various instances stations were placed at considerable distances from the towns they were supposed to serve, either because the sites could be obtained more cheaply, or because of quarrels with the towns. The method of construction adopted was in many ways not economical, and this added from thirty per cent to fifty per cent to the cost of construction. The iron rails laid down in 1855 and 1856 were of poor quality, and had soon to be replaced. At the same time the road was not properly ballasted. The excellence which it had been anticipated would attach to the Grand Trunk from its construction being in the hands of English contractors was not apparent. Unaccustomed to the rigours of a Canadian winter, the contractors laid down rails that would not stand the frost. The road as at first constructed was, in reality, very rough and had very sharp curves. So early as 1859 the rails were in bad shape. The stations at Kingston, Cobourg and Port Hope had been so placed that branch lines were necessary in order to give access to the lake vessels. As was later admitted by Baring, the line when taken over by the company from the contractors was by no means as it ought to have been. Once the railway was under way it was found that the cost of running it was for a time eighty-five per cent, not forty per cent, of the gross earnings.

The Grand Trunk showed recklessness in its expenditures. The Atlantic and St Lawrence was leased in 1853 for a period of 999 years at six per cent on its cost. At the same time this railway, which later required expensive reconstruction, was in such bad financial condition that stock control could readily have been obtained at a low figure since the stock was quoted down to thirty-eight. The Victoria Bridge, which was first discussed in Montreal when the St Lawrence and Atlantic was engaging attention, was, no doubt, a wonderful achievement and marked an era in engineering science ; at the same time its cost was out of all proportion to the prospective traffic.

The prospectus of the Grand Trunk had stated that it

was protected from injurious competition both by natural causes and legislative enactment, and that it received between Kingston and Toronto the entire produce of the rich country north of Lake Ontario. Once the railway was under way it had to face in the summer time the competition of water carriers on the magnificent highway of Lake Ontario and the St Lawrence. When the prospectus was issued one keen anonymous critic had pointed out that: 'The railway will therefore have to maintain a constant struggle for the transport of goods and passengers for a distance equal to at least three-fourths of its whole length, and from the nature of the traffic the conclusion is probable that the rivalry will not prove contemptible.' The promoters thought that the small size of the vessels and the cost of the trans-shipments would turn the traffic to the railway. The success which the English railways had in controlling the canals led to the statement that the completion of the railway would drive the steamboat traffic off the St Lawrence. Once the line was in operation the fallaciousness of such hopes was soon seen. By 1859 the railway had to admit that it could not compete for heavy traffic. Between Montreal and Toronto the water rate was from $2 to $3 per ton, while the rail rate was $3.50. Between Montreal and Quebec the water rate was $1 per ton. When the railway endeavoured to recoup itself by charging heavier rates on the carriage of grain in the winter time, the producers stored their commodities until water navigation was once more available.

The stockholders of the Grand Trunk saw in the presence of government directors on its board an evidence of the intention of the government to guarantee, so far as it was able, the success of the road. The year 1857 brought further application for aid, which resulted in the government postponing its obligations until after the company earned six per cent on its paid-up capital. Even then the government was not prepared to look the facts in the face, for it held that this postponement would be of brief duration. At the same time the provision for government directors was rescinded.

The difficulties of the time were not limited to the Grand Trunk alone. In 1856 the Buffalo and Goderich had to stop

operations because of financial embarrassment. In the same year the Grenville and Carillon was so embarrassed that it was empowered to place the road under the control of the wardens of the counties of Ottawa and Argenteuil. The difficulties of the railways continued. In 1865 the Prescott and Ottawa was sold to meet the claims of the English firm that had supplied its rails. The Great Western and the Northern, which had received aid under the Guarantee Act, were soon in difficulties. In 1856 the Northern, which had been built to develop transit trade between Lake Ontario and Lake Huron, defaulted payment of the government interest after having been open for traffic barely a year. By 1859 it was in a condition of absolute insolvency ; the track and the rolling stock were in such a condition as to endanger the safety of the public, and the government found it necessary to expend $60,000 in putting it into working shape.

Almost all the money advanced to the railways under the Guarantee Act and the Grand Trunk charter finally constituted a gift rather than an advance. In principal and interest this phase of Hincks's policy cost the country $33,000,000.

In all these events the Municipal Loan Fund played a considerable part. In Upper Canada the local governing bodies took reckless advantage of the fund. Cobourg and Port Hope, with a population of less than 9000, had borrowed $1,240,000, on which there were arrears of interest of $625,000. To the Canada Central the counties of Lanark and Renfrew subscribed $800,000, while the township of Elizabethtown subscribed $150,000 ; the arrears of interest were $306,000 and $51,000 respectively. It was supposed that this road would pay the interest from the first and recoup the principal in twenty years. The feeling of the time was that, though taxation for railway purposes involved an apparent sacrifice, it was in every sense a highly profitable investment.

The cessation in railway construction and the poor fortunes of some of the ventures aided, soon convinced the municipalities that they could not meet their obligations, and arrears of interest rapidly accrued. The difficulties of the fund were further aggravated by the bad harvest of 1858

and the unsatisfactory harvest of 1859. While the government had emphatically stated that it was not responsible for the fund, it was unable to reflect its credit upon it and at the same time to be free from responsibility. It was therefore deemed necessary to make advances to enable the fund to meet the interest due to the bondholders. When the fund was created Hincks had expected that the debentures issued would be used as a basis for note circulation, under the free banking system, thereby creating a local demand for them and enhancing their credit. The failure of the free banking system in competition with the asset system prevented this hope being realized. The safeguards for repayment by the municipalities of the sums borrowed by them soon proved illusory. The enforcement of collection through the sheriff, in the case of a defaulting municipality, was difficult and unwelcome, and the government shrank from it. The general situation may be exemplified by the experience of the city of Ottawa, which had borrowed $200,000 from the fund to aid the Ottawa and Prescott. The burden of interest being too heavy for the limited resources of the municipality, the city defaulted. In the words of Sir Richard Scott, who had been most active in the enterprise, 'As some other municipalities also failed to pay the interest and sinking fund on their loans from the fund, there was a political pull to gain time.' The final outcome was that in 1859 the government had to close the fund and to assume £3,000,000 currency of obligations outstanding against it.

The cautious temperament manifested by Lower Canada has more than once been referred to. This again appears in the expenditures from the fund: in Upper Canada, out of $7,300,000, $5,800,000 had been spent in railways; in Lower Canada, out of $2,400,000, $900,000 had been expended on railways, while the remainder had been expended on local improvements. In round numbers a debt of ten million had been incurred by the municipalities, three-fourths of which had been expended on railway construction. There were in Upper Canada arrears of interest of $2,300,000, while in Lower Canada the arrears were $300,000.

While the Grand Trunk was not completed until 1860, the

active work of construction was virtually complete by 1859. Between that date and Confederation only forty-three miles were built. The difficulties of the Grand Trunk continued. In 1860 it had to cut down its staff of employees because of lack of funds. In the same year it attempted unsuccessfully to raise £1,500,000 to pay off current liabilities and increase the rolling stock. In the same year the rolling stock came into the hands of the Barings, to whom the road was indebted. Further aid was sought from the government in 1861 on the ground that a moral obligation on the part of Canada existed. But it was decided that no further assistance should be given.

For both the Grand Trunk and the Great Western it was a time of trial. The Grand Trunk, with a portion of its route subjected to keen water competition and with an unremunerative section east of Quebec, was in a worse condition than the Great Western with its more compact line and its share in the transit trade. When the Civil War broke out, it was anticipated that this would help the Canadian lines by diverting traffic to them. While there was an increase, both lines, and the Great Western in particular, found themselves subjected to heavy losses from being paid in depreciated paper currency. In the first half of 1863 the losses on this account compelled the Great Western to pass its dividend. The participation in American traffic which had been sought brought with it low rates, which led to bitter complaint on the part of Canadian shippers, who considered that they were being discriminated against. The Great Western, because of its close relationships with the American lines, was subjected to all the fluctuations of the constant rate wars. When the American lines obtained their own connections between the East and the West the Great Western lost traffic. The period during the closing years of United Canada was one of temporary arrangements between railways, and between railways and water carriers, in the hope of mitigating the fierceness of competition. The railway mileage was in advance of the country's needs. It was a time of rest and adjustment, a period of hoping for better fortunes.

IV

CONFEDERATION AND RAILWAY EXPANSION

The Intercolonial

IN 1867 Canada had 2529 miles of railway which had cost $160,000,000. Of this sum the different colonies had contributed approximately thirty-seven per cent. The struggling provinces, whose total foreign trade in the year before Confederation was only $147,000,000, had contributed twenty dollars *per capita* in aid of railway enterprise.

The history of the Intercolonial Railway, known in an earlier period as the Halifax and Quebec, is part of the history of Confederation. In 1857 a renewed attempt had been made by John A. Macdonald and John Rose, as delegates of the Canadas, to enlist imperial aid by the old familiar appeals. It was stated that the Canadas and the Maritime Provinces had a through connection by means of American railways, but this connection, it was urged, would tend to subvert the existing relations between the homeland and the colonies, and would in process of time attract the latter still more closely to the United States. This application for imperial aid failed; but the matter was again taken up in 1861, the colonies undertaking to revert to the policy of co-operation which they had outlined at an earlier date. The difficulties which had arisen in connection with the '*Trent* affair' were skilfully adduced as an evidence of the military necessity of the road. Finally the home government agreed to extend a guarantee as it had done in 1854. A convention of fifteen delegates representing the different provinces undertook, at a meeting in Quebec in September 1862, that the Canadas should raise five-twelfths of the cost while the Maritime Provinces should each be responsible for seven-twenty-fourths. Canada stated its willingness to bear the cost of the survey, and in 1864 Sandford (afterwards Sir Sandford) Fleming was appointed to conduct it. In this year the imperial government restated its willingness to extend a

guarantee provided advantage was taken of it within five years from December 1862.

The Maritime Provinces insisted, as a condition of their entrance into Confederation, that the railway should be constructed at the expense of the new Dominion. In the Quebec Conference Resolutions of 1864 it was urged that the new general government should procure without delay the completion of the railway from Rivière du Loup to Truro.

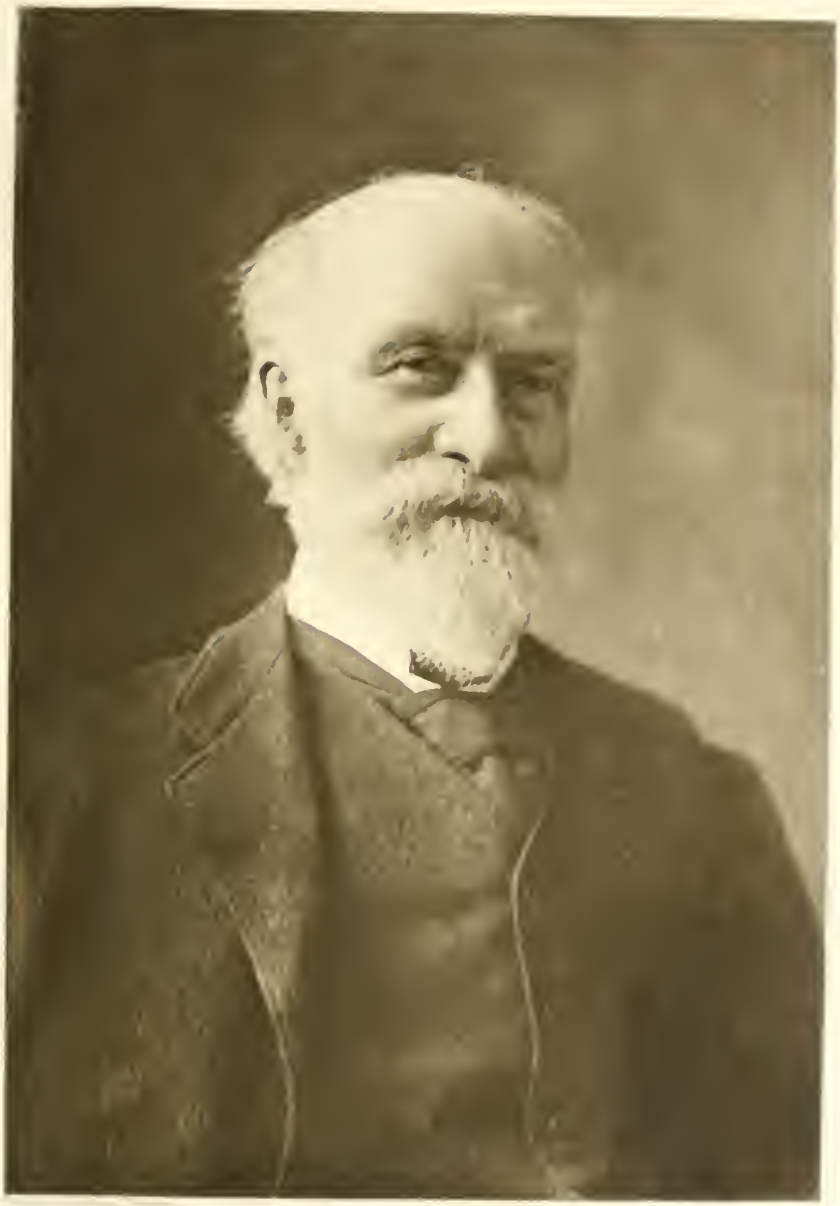
The British North America Act set out that the construction of the Intercolonial was essential to the consolidation of the new Dominion, and that it was to be begun within six months after the union was formed. The imperial government had undertaken to guarantee four per cent on a loan of £3,000,000. Of the loan thus guaranteed by the imperial government one-half was at once issued. The loan was very popular, and was subscribed four times over at a premium of from eleven and a half to twelve.

In 1864, as at an earlier date, the question of the route was a difficult one. It was in the first place necessary to obtain one which lay wholly within Canadian territory. While five routes were suggested, the discussion finally narrowed to three—the Chaleur Bay or Northern, the Central and the Frontier. The frontier route was objected to on account of its proximity to the Maine boundary. With the memory of the '*Trent* affair' still fresh it was but natural that the question of military advantage should be emphasized. In the discussion in the British parliament on the British North America Act, as well as in a dispatch from the imperial government to the governor-general, the necessity of the northern route had been emphasized. There was a general feeling at the time that if this route were not adopted the imperial authorities would not feel disposed to extend the proposed guarantee.

From the imperial standpoint the reason for the adoption of the northern route was its assumed military advantage. From the Canadian standpoint the railway was part of the price paid for Confederation. It was a political, not a commercial undertaking. In the British House of Commons in 1867 it was said that the earnings of the road 'would never

SIR SANDFORD FLEMING

From a photograph by Topley, Ottawa



pay for the grease for the carriage wheels.' At the same time a Canadian pamphleteer said: 'If the traffic from all sources be found adequate to the cost of maintenance, running expenses, management and repairs, the people of this country will not repine. The most sanguine expect little more, and many believe that for years, if not for generations, it will be a drain on the public exchequer.'

The construction of the line was placed in the hands of four commissioners, the government retaining a power of supervision over all important contracts. The government took the position that the intervention of a commission would protect it from charges of political favouritism.

While the construction had thus begun, there was no agreement as to whether the completed road should be under private or public management. The Toronto *Globe*, in an editorial on October 11, 1867, said that private management would be necessary, since it would be impossible for the government to manage such an enterprise. But the party then in power drifted into a policy of government ownership and management. The British North America Act declared the railways which had been constructed in the Maritime Provinces to be the property of the Dominion. In 1872 these were constituted part of the Intercolonial Railway. In 1874 the railway itself was placed under the direct control of the department of Public Works. The whole line was completed in the course of the year 1876. In this year the number of miles in operation was 714; these had been constructed at a cost of $34,363,896.

The Canadian Pacific

So early as 1829 it was suggested that a route to the Pacific might be obtained by utilizing the lakes and water-courses. Many suggestions were made by pamphleteers, the most interesting of which are those of Carmichael Smyth in 1849. He advocated the construction of the railway from Halifax to the Pacific Coast by convict labour. The road he estimated would be 4000 miles long, and cost £24,000 per

mile. The management should be placed in the hands of a board of fifteen, on which Great Britain, the Hudson's Bay Company, Nova Scotia, New Brunswick and Canada should be equally represented. An interesting forerunner of imperial federation appears in the suggestion that the colonial representatives of this board might have seats in the imperial House of Commons.

Howe, in the midst of his advocacy of the Halifax and Quebec Railway, expressed the opinion in 1851 that many then living would travel by rail from Halifax to the Pacific in five or six days. In 1851 Allan McDougall of Toronto, in advocating the construction of a transcontinental railway from the Great Lakes to the Pacific, urged that it should be assisted by the grant of a strip of land sixty miles wide along the route. The pamphlet he published in advocacy of this was entitled *A Railroad from Lake Superior to the Pacific. The shortest, cheapest and safest communication for Europe with Asia.* The railway committee of the legislature of Canada in reporting on the application for a charter for this enterprise admitted its importance, but said that the great expenditure necessary was beyond the powers of the colonies and would necessitate the co-operation of Great Britain and of the United States.

In 1858 the legislature of Canada incorporated a company known as the North-West Transportation, Navigation and Railway Company, which was empowered to construct links of roads, tramways and railways 'between navigable lakes and rivers so as to provide facilities for transport from the shores of Lake Superior to Fraser's river.' But nothing came of this.

In 1862 the colonies suggested, as a means of opening up the North-West, the construction of a wagon express road and telegraph line from Canada to the Pacific. In the Quebec resolutions of 1864 it was stated that 'the communications with the North-Western Territory and the improvements required for the development of the trade of the great West with the seaboard are regarded as . . . subjects of the highest importance to the federated Provinces and shall be prosecuted at the earliest possible period the state of

the finances will permit.' In 1869 Earl Granville sent a dispatch to Governor Musgrave of British Columbia pointing out the advantage of railway communication with the East.

The western expansion of Canada soon began. In 1870 Manitoba became a province ; it was followed in 1871 by British Columbia, which had insisted, as an essential condition of its entrance to the Union, on a substantial guarantee of the construction of a railway to connect it with the eastern provinces. Accordingly the Dominion undertook to begin such a railway within two years after the entrance of British Columbia and complete it within ten years. In British Columbia miners were paying fourteen cents a pound for the transport of supplies from Victoria to the mines. It was anticipated that the railway would lower the cost of supplies without lowering the wages ; that there would be a large influx of population, and that within ten years two new provinces would be created between Manitoba and the Rockies.

The liberals attacked this arrangement as a prodigal pledging of the country's revenues to a precipitately undertaken enterprise. The conservatives successfully fought out the election of 1872 on the railway issue. It was now decided that the railway should be undertaken as a private enterprise assisted by a land grant of 50,000,000 acres and a cash subsidy of $30,000,000.

The next stage in the history was concerned with the rivalry of local interests—Montreal represented by Sir Hugh Allan, and Toronto represented by D. L. Macpherson—to obtain charters to carry on the enterprise. Finally a combination of interests was effected. But just at this juncture the fortunes of the enterprise were entangled with political scandal. In the election of 1872 Sir Hugh Allan had contributed to the campaign funds of the successful party, and it was now alleged that the railway charter was the price for this support.

The election of 1873 returned the liberals to power under Alexander Mackenzie, and the slow progress of the Canadian Pacific entered upon another stage. Canada had in the

meantime begun to experience the effects of the crisis of 1873, and to the liberals this appeared to be another reason in favour of the policy of deliberate advance which they had already advocated. Mackenzie desired to obtain some relaxation of terms from British Columbia, so that the time for construction might be lengthened. Meanwhile he resolved, as a temporary measure, to utilize the water stretches between the Rocky Mountains and Fort Garry as well as those between Fort Garry and Lake Superior ; at the same time he desired to connect, by way of Pembina, the Province of Manitoba with the American railway system.

The legislation of 1872 had provided that the enterprise was to be undertaken as a private work. The legislation of 1874 provided for construction, at the government's discretion, under either private or government ownership. Provision was made for a land subsidy of 20,000 acres per mile, and a cash subsidy of $10,000 per mile. As a palliation for the discontent existing in Canada over the unsatisfactory outcome of the Treaty of Washington, the imperial government had undertaken to guarantee interest at four per cent on a loan of £3,600,000 in aid of the construction of the Canadian Pacific and the improvement of the Canadian canals. Provision was made in the Canadian legislation of 1874 that £2,500,000 of this guaranteed loan should be set aside for the Canadian Pacific.

The legislation of 1874 stated that the construction was to proceed ' as rapidly as . . . can be accomplished without further raising the rate of taxation.' In British Columbia this omission of any date for the completion of the work was regarded as a ' repudiation of the terms of union,' and it was openly stated that the legislation was framed with the intention of precluding the building of the railway. The Hon. J. D. Edgar was sent to British Columbia in a vain attempt to obtain the acquiescence of that province in easier terms. The matter was referred to Lord Carnarvon, the secretary of state for the Colonies, who proposed a compromise which was grudgingly accepted by both the Dominion and the province. The following is a comparative statement of the terms :

The Edgar Terms	The Carnarvon Terms
1. To commence at once and finish as soon as possible a railway from Esquimalt to Nanaimo.	1. The same.
2. To spare no expense in settling as rapidly as possible the line to be taken on the main land.	2. The same.
3. To make at once a wagon road and line of telegraph along the whole length of the railway in British Columbia and to continue the telegraph-line across the continent.	3. No limitation of construction of the wagon road and telegraph-line to British Columbia.
4. The moment the surveys were completed a minimum of $1,500,000 to be thereafter expended annually on the construction of the railway within the province.	4. $2,000,000 instead of $1,500,000 per annum.
	5. The railway to be completed on or before December 31, 1890, at least so far as to connect with the American lines at the west end of Lake Superior.

The government continued the surveys and carried on the work of construction. Throughout the period from 1874 to 1879 the revenues of the country were in an increasingly unsatisfactory condition. Between 1873 and 1879 the volume of trade fell off by $64,000,000. Economies were introduced in every direction, and in this connection the railway expenditures were cut from $7,500,000 in 1875-76 to $4,300,000 in 1876-77. In 1878 came the political overthrow of the liberals and the return of the conservatives under Macdonald.

Confronted by financial difficulties, the new administration attempted to enlist imperial aid on the ground, not only that the road would be of imperial value from a military standpoint, but also because the opening up of the North-West would afford an outlet for the surplus population of Great Britain. The Canadian government was prepared to set aside as its contribution to the work 100,000,000 acres of land with an estimated average value of two dollars per acre. The appeal for further imperial aid proving fruitless,

it was now found necessary to retrench the expenditures on the railway.

An attempt was made to enlist private capital to carry on the work as a private enterprise. The Grand Trunk refused to undertake it, since it could not see that any extra traffic would thereby be obtained. The government was successful, in September 1880, in obtaining an agreement with the Canadian Pacific Syndicate. In introducing legislation in 1881 to implement this agreement, the government stated that parliament had repeatedly declared its preference for private construction and management aided by grants of money and land. The construction which had so far been accomplished was declared to be unsystematic in its nature; it was therefore necessary to obtain some more systematized plan of construction, not only to ensure the development of the North-West, but also to preserve the good faith of the government in the performance of its obligation.

The signal commercial success which has attended this enterprise is the more remarkable because it was in its beginning a political undertaking. Its fortunes have amply justified that faith in Canada's development which was not justified by the financial power of the country at the time of its inception. The syndicate undertook to complete the work in ten years from the date of the contract. The assistance offered by the government was not more generous than that which had been offered earlier. The company was to receive $25,000,000 in cash and 25,000,000 acres of land in the North-West. The railway and its capital were to be exempt from taxation—Dominion, provincial or municipal. The land grant was to be free from taxation for twenty years from the grant from the crown. In addition the government gave the company the 713 miles of railway which was in part constructed and in part under contract.

During the course of the debate on the legislation Sir John A. Macdonald said: 'We desire to have the trade kept to our own side . . . that not one of the trains which passes over the Canadian Pacific Railway will run into the United States if we can help it, but may instead pass through

our own country [so] that we may build up Montreal, Quebec, Toronto, Halifax and St John by means of one great Canadian line, carrying as much traffic as possible by the course of trade, through our own country.' To this end there was inserted in the legislation the 'monopoly' clause, which provided, in substance, that, to preclude the traffic of the North-West being tapped by American carriers, there should not be chartered for a period of twenty years from the enactment of the charter legislation any railway within fifteen miles of the international boundary. And the government undertook to maintain this inhibition within this period in the case of any provinces that might thereafter be created in the North-West.

Railway Development in Ontario

In 1867 the average earnings per mile per week on the Grand Trunk were $82.19, thus falling below the £25 ($121.65) per week which the prospectus had anticipated. Included in this were such low averages as $2.86 for the Dover Branch and $14.12 for the Rivière du Loup section. The payment of its charges on American through freights in depreciated paper currency meant a loss on the gold basis amounting in 1862-66 to $1,400,000. The Great Western had to meet the same conditions. For local traffic there was competition at many points between the Great Western and the Grand Trunk, and this was estimated to cost each line $250,000 per annum. On through American traffic it had to meet not only the American lines south of the Lakes, and the American lines east and west of the western peninsula of Canada, in which the Great Western was a link, but also the competition of the Lakes and the St Lawrence. The line between Montreal and Quebec did not pay because of water competition in summer and lack of traffic in the winter. At times the keenness of water competition went to such an absurd length that in 1874 the steamers carried passengers between Montreal and Quebec for one dollar, including in this charge a state-room and a meal.

The imperfect development in 1867 of facilities for through

passenger traffic is shown in the opinion expressed by President Tyler of the Grand Trunk :

> It is far more desirable and agreeable (especially in America) for the passengers to change carriages every 300 or 400 miles, as at Buffalo and Detroit, than that they should go through without change for upwards of 900 miles and 36 hours. . . . Sleeping carriages are necessary for one part of the journey and day carriages for another part, and it is better in this particular case to keep them more or less distinct rather than to have a combined carriage for both purposes.

In 1867 the Grand Trunk considered changing its name to the Canadian Railway, the directors expecting that, when the Intercolonial was opened, the two would combine to form a through line. Between 1868 and 1871 the idea, which sprang from hope rather than belief, was common in London that the Dominion government might take over all the Canadian railways.

In Ontario it was thought that one essential defect in the earlier construction was its excessive cost. Colonization roads were needed, and it was felt that in the existing scarcity of capital cheaper construction must be obtained. So attention was turned to narrow gauge lines which it was estimated could be built for from thirty per cent to fifty per cent less than the broad gauge lines. In the further desire to obtain cheap construction it was suggested in 1869, when a railway from Peterborough to Haliburton was being considered, that wooden rails might be used.

The desire for rapid construction was helped on by the discontent with the methods of the broad gauge lines. In 1868 it was complained that the Grand Trunk was neglecting local for through business; and that local shippers, being unable to obtain sufficient cars in the winter time, were forced to wait until the summer to take advantage of water transportation. So unsatisfactory were the transportation conditions on the Grand Trunk, and so limited were its resources, that in the same year it contemplated asking the large shippers to supply their own cars, hoping in this way to facilitate the moving of the traffic.

In both the Grand Trunk and the Great Western there was constant jangling and friction between the managements in Canada and the directorates in England. The English stockholders, wearied with the unprofitable fortunes of their ventures, were constantly sending special committees to Canada and changing their presidents and managing officials. During the period down to 1880 the Grand Trunk and the Great Western were the graveyards of many reputations. There was indeed a lack of contact between London and Canada which facilitated mismanagement and extravagance, and convinced the Canadian people that independent, more cheaply constructed lines were necessary. In 1872 President Potter of the Grand Trunk, who had assumed that the road was progressing favourably, found, after a short sojourn in Canada, that the road, rolling stock and rails were in a thoroughly bad condition, and large unnecessary expenditures had been made. When the gauge of the roadway was changed in 1874, the cost of the work exceeded the estimate by £300,000. Nor was this unsatisfactory condition limited to the Grand Trunk alone. In 1874 a committee of investigation found a lack of responsibility among the officials of the Great Western, as well as lavish expenditure; and it was stated that rebates on freight were in some instances going to officials of the company. In 1875 President Childers found the road over-officered. The state of affairs may be gathered from a general order which was issued directing the permanent officers to have no interest in any other business, railway, or railway supply company, and providing for rigid subordination of the officials to the general manager.

The new era of railway construction in Ontario hastened by such conditions had by 1870 taken on a speculative phase. The general feeling was that rapid railway extension was necessary to open up the back districts of the province. In 1871 the province adopted a subsidy policy under which grants of from $2000 to $4000 per mile might be made. It was stated that the object of this policy was to afford connections with the back country, the free grant land and the inland waters. The municipalities competed in giving

assistance to railways. Toronto gave $350,000 to the Toronto, Grey and Bruce, $150,000 to the Toronto and Nipissing, and $350,000 to the Credit Valley. The tortuous route of the Toronto, Grey and Bruce owes unnecessary length to the local competition in monetary aid of the municipalities through which it passed. The province and the municipalities along the line of the Credit Valley assisted it to the amount of $1,468,000. The railway construction of this period is shown in the following tabular summary :

Railway	Chartered	Completed	Gauge	Length
Toronto, Grey and Bruce . .	1868	1873	3 ft. 6 in.	191 miles
Toronto and Nipissing . .	1868	1872	3 ft. 6 in.	105 „
Kingston and Pembroke . .	1871	...	4 ft. 8½ in.	73·5 „
Credit Valley	1871	1879	4 ft. 8½ in.	193·5 „

Quebec Railway Projects

In Quebec the desire for cheap and rapid construction led to the chartering of railways equipped with wooden rails. The pioneer road of this type, the Quebec and Gosford, which was chartered in 1869, was intended to aid in bringing cordwood to Quebec. By 1871 thirty-six miles of it were in operation. In 1869 a subsidy policy was begun under which money grants might be made payable in instalments. This was subsequently modified by provisions for land grants in place of cash subsidies.

The most important railway project of this period in Quebec was that of the North Shore and the Montreal and Northern Colonization Railways, the two lines being later known as the Quebec, Montreal, Ottawa and Occidental. This project had been brought to the front in 1853, when a land grant of 4,000,000 acres was made in aid of it ; but no construction was undertaken until the Intercolonial and the Canadian Pacific were engaging the attention of the Dominion. What Quebec had in mind was that construction westward from Quebec along the north shore of the St Lawrence and of the Ottawa would afford a connection with the line of the

Canadian Pacific, thereby making Quebec an outport for western traffic.

The two railways were begun as private enterprises assisted by government land grants and municipal aid. It was soon found necessary to make government loans. Both railways found difficulty in floating their securities, a difficulty intensified by the opposition of the Grand Trunk. In 1875 it petitioned the legislature of Quebec to abstain from assisting any railways on the north shore of the St Lawrence which would interfere with the rights of the Grand Trunk; and Richard Potter, the president of the Grand Trunk, represented in 1875 to Lord Carnarvon that this opposition to the competing railway might fairly claim the moral support of the imperial government. The Dominion government resented this proceeding because of its effect upon Canadian credit, and in 1876 Potter resigned, his opposition being disavowed by the Grand Trunk.

As a consequence of the poor financial success which had attended the two roads, the provincial government found itself under the unwilling necessity of taking them over in 1875 and constructing and managing them as a government work.

Rate Wars

The Grand Trunk and the Great Western were continuously embroiled in American rate wars. In 1867 the passenger rate from Buffalo to Detroit was cut from seven to three dollars. In 1869 a rate war broke out between the New York Central and the Pennsylvania over through connections with Chicago. The Grand Trunk estimated that through the low rates charged it suffered a loss of £20,000. In 1874 freight rates were from fifteen per cent to twenty per cent lower than 1873. In 1874 there was a rate war between the Grand Trunk and the Great Western which lasted practically the whole year. The Grand Trunk computed its losses at this time from this rate war and from the American rate wars at £950,000. At the same time much of the difficulty arose from the Grand Trunk insisting on rating differentially because of its circuitous route. The

rates which it had to make in moving traffic to Boston via its Portland connection, in competition with American lines, were also in many cases ruinously low.

In the attempt to lessen competition the Grand Trunk and the Great Western agreed in 1869 to maintain equal rates on all competitive traffic as well as to pool all competitive Canadian traffic. They also stipulated not to make unnecessary expenditures on new lines. This, like the later agreements, proved futile. Short-lived agreements were drawn up and mutual recriminations were constant. In 1876 the question of an amalgamation of the two lines began to be discussed. In 1876 the Grand Trunk claimed that the failure of negotiations was owing to the Great Western being forced into a rate war by its American connections. On the other hand, the Great Western dubbed the Grand Trunk the 'Ishmael of American railways.' The importance of American traffic to the Great Western caused one shareholder to say: 'It is an utter impossibility for the Great Western railway to amalgamate with the Grand Trunk. The Great Western Railway is not a Canadian railway; it is an American line.' In 1877 another agreement in regard to the maintenance of rates was arrived at. While no definite action in favour of amalgamation was taken, there was such an increasing desire shown for it by the shareholders of the Great Western, as distinct from the directors, that President Childers of the latter railway, in resigning in 1879, said he did so because 'he could no longer resist fusion with the Grand Trunk.'

The Rivière du Loup extension, which had always been complained of by the Grand Trunk as a burden on its revenues, was taken over by the Dominion government in 1879 to form a part of the Intercolonial, and the Grand Trunk used the funds from this sale to obtain an independent connection with Chicago.

The Gauge Problem

In the earlier days when the importance of through haulage was not appreciated, there were no clear ideas on the

subject of uniform gauge. The Champlain and St Lawrence had been built on a gauge of 5 feet 6 inches. The same gauge had been recommended by Major Robinson for the Halifax and Quebec. On the other hand, in 1847 the imperial authorities had recommended that in choosing a standard gauge attention should be paid to that of the United States. The charter incorporating the St Lawrence and Atlantic had provided for a gauge of 4 feet 8½ inches, but on the petition of the company this was changed to 5 feet 6 inches. The real reason for this was that the Atlantic and St Lawrence, desiring to make Portland the terminus of the Canadian lines, wanted a gauge differing from that of the lines centring in Boston. This determined the gauge for the rolling stock between Portland and Montreal. Many other reasons, engineering and operating, were given. Then, as now, railway honesty as to cars was an uncertain thing ; and it was urged that if the railway allowed its cars to get off its own lines it would never get them back ; the difference in gauge would prevent this.

The American lines which formed eastern and western links in the through route in which the Great Western co-operated had the 4 foot 8½ inch gauge, which owes its historical origin to the accident of being based on the English mining tramways with which Stephenson had been acquainted. The Great Western desired to use this gauge in order to facilitate that through movement of American traffic which was one of its reasons for existence. But the Canadian government insisted on the broad gauge of 5 feet 6 inches as the condition of the government aid ; and so the cumbrous expedient of a third rail had to be used. In 1851 the broad was adopted as a standard gauge and was used in the construction of the Grand Trunk. The effect may be studied in connection with the through business of the Grand Trunk. Traffic had to be transferred from one set of cars to another at the American frontier, for the most part by manual labour. In some cases the axles were made adjustable to the two gauges ; in other cases the car bodies had to be lifted. The expense and delay are obvious.

While a standard gauge had been adopted in 1851,

diversities were still present. In 1871 eight railways with a mileage of 693 miles had the gauge of 4 feet 8½ inches. The particularism which caused differences in gauge may be seen in the case of one of these railways—the St Lawrence and Ottawa. When this line was in need of funds the individuals who assisted it stipulated that it should not have the same gauge as the Grand Trunk. This precluded Grand Trunk cars moving over this line into Ottawa. To add to the complexity, there was also the movement in Ontario for narrow gauge lines on the score of economy.

When the Intercolonial was chartered, provision was made for the gauge of 5 feet 6 inches. However, during 1873 the Grand Trunk came to the conclusion that it was crippling its traffic by persisting in using a gauge which interfered with through traffic. The result was that it changed its gauge to 4 feet 8½ inches at a cost of $5,000,000. This led the government to reconsider its decision and adopt the same gauge for the Intercolonial. Provision was also made for its use on the Canadian Pacific. Ontario in 1874 decided that in future all roads receiving subsidy aid should be built on the 4 foot 8½ inch gauge. This settling of the standard gauge in the year 1874 contributed greatly to the efficiency of the transportation system which the Dominion was struggling to develop.

V

THE GOVERNMENT AND THE RAILWAYS

Eastern Expansion of the Canadian Pacific

THE Canadian Pacific Railway was incorporated on February 17, 1881 ; construction work was begun in June of the same year. The last rail was laid on November 7, 1885, and the line was opened for through traffic on June 28, 1886. The railway was constructed in one-half the time stipulated. This was accomplished through the continuous co-operation of the government, in the face of opposition from the Grand Trunk.

The incorporators of the Canadian Pacific had looked to a comprehensive railway system which would not be dependent for its eastern outlet on the rails of an unfriendly rival. For although the railway was primarily one extending from Callander near Lake Nipissing to the Pacific Coast, it was authorized to obtain a connection with the city of Ottawa through the acquisition of the Canada Central. And in addition it was empowered, on the authorization of its shareholders, to obtain, 'hold and operate a line or lines of railway from the City of Ottawa to any point at navigable water on the Atlantic seaboard or to any intermediate point, or it may acquire running powers over any railway now constructed between Ottawa and any such point.' These powers are noteworthy in view of the later criticism of the policy of the railway. At the time a pamphleteer, friendly to the Grand Trunk, said: 'Never before were such extensive powers granted to any corporation except perhaps in the case of John Law and his Mississippi scheme.'

The eastern expansion of the Canadian Pacific began at once. In 1881 the Canada Central, which had been subsidized under the Mackenzie régime to be connected with the eastern terminus of the Canadian Pacific, was purchased. The portion of this road between Pembroke and Lake Nipissing which was then incomplete was finished by the Canadian Pacific in 1883. In 1881 the Brockville and Ottawa was acquired, and by 1884 a majority of shares in the St Lawrence and Ottawa. The Grand Trunk said it was not hostile to the construction of the Canadian Pacific and the attendant development of the North-West, but declared that the 'original policy had been changed and the Canadian Pacific had been empowered . . . to acquire various lines in the older sections of the country, and to make extensions in competition with, and in duplication of, the Grand Trunk and other railways.' The Great Western might have used this language in the earlier days when it was fighting against the Grand Trunk for exclusive territory. The criticism of the Grand Trunk in the present instance was a piece of special pleading. It had, in the first instance, been sceptical of the traffic development of the North-West; now it desired

for itself the eastern haul on this through traffic. The position of the Canadian Pacific, as set out at a later date by its president, was: 'Had you stopped at the completion of your main-line across the Continent your enterprise would have come to ruin long ago, or at best it would have existed only as a sickly appendage of the Grand Trunk. Like a body without arms it would have been dependent upon charity,—upon the charity of a neighbour whose interest it would be to starve it.'

In 1882 the Canadian Pacific purchased from the Province of Quebec, for the sum of $4,000,000 and the undertaking to complete certain improvements, the portion of the provincially owned and operated line between Montreal and Ottawa. In 1884 the province had disposed of the line between Quebec and Montreal to a private company. The Grand Trunk thought it must obtain a controlling interest in this line to protect itself against ruinous competition. At first the arrangement contemplated was one providing for interchange of traffic and division of rates. In order to facilitate traffic a short transfer line known as the Union Jacques Cartier Railway, whose stock was held jointly by the two companies, was built to connect the two railways. In the meantime the Grand Trunk and the Central Vermont acting conjointly had obtained a control of the stock of the North Shore.

The Grand Trunk had expressed the opinion that the Canadian Pacific was not especially interested in obtaining an entrance into Quebec. The Canadian Pacific and the Province of Quebec were, however, of a different opinion. The attitude of the government and its threat in 1884 of the construction of a parallel line between Montreal and Quebec brought the Grand Trunk to terms. On September 19, 1885, the road was acquired by the Dominion government and subsequently transferred to the Canadian Pacific. The subsidy which had been granted aided in obtaining this result. The claims of the Grand Trunk against the road were discharged for $530,000. The road was acquired subject to its liabilities, including the bonded indebtedness and its obligations to the provincial government. The result of the

arrangements was that, with the aid of the Dominion government subsidy, the desired connection was obtained at a charge to the Canadian Pacific of less than $200,000 a year. The Grand Trunk had the consolation of having at least lost nothing on the transaction.

In 1881, when the Canadian Pacific was chartered, the Ontario and Quebec, which was intended to run from Toronto to Ottawa by way of Smith's Falls, also received its charter. The parties controlling it were friendly to the Canadian Pacific. The next step in consolidation was an amalgamation whereby this railway took over, on 999 years' leases, the Toronto, Grey and Bruce, the Credit Valley and the Atlantic and North-West Railways. The Credit Valley gave a connection between Toronto and St Thomas. The Toronto, Grey and Bruce enabled the Upper Lake traffic to be tapped at Owen Sound. The Atlantic and North-West had been chartered in 1879 with an exceedingly liberal charter, which permitted it to be built from the Atlantic seaboard of Canada to a port on the east side of Lake Superior ; and it had power to acquire any railway either in Canada or in the United States between these points. The real intent appeared when on November 1 of the same year the long term leases of these properties were taken over by the Canadian Pacific. This left the Canadian Pacific with its western terminus at St Thomas. During the early part of 1883 there were negotiations between the Canadian Pacific and the Grand Trunk for working out of satisfactory traffic arrangements. These proving futile, the struggle broke out again.

The Grand Trunk *v.* the Canadian Pacific

The Grand Trunk and Great Western had for years been active competitors, their warfare having occasional brief periods of armed peace. The directors of the Ontario and Quebec had entered into negotiations having in view the acquisition of the Great Western as part of a through route. The Grand Trunk, fearing the result of this, had concluded, on May 25, 1883, an amalgamation agreement with the Great Western. The language of President Tyler at a Grand Trunk

meeting on March 29, 1883, set out quite clearly that the aggressive policy of the Canadian Pacific was to be offset by attacks upon its credit. He said :

> They have come into our territory in different directions and have acquired lines of railway and have entered upon schemes of aggression. . . . If anybody from Canada attacks our United system it is not necessary that they should meet with any opposition from the board, because they are attacking the interests and attacking the pockets of the whole of this vast proprietary of 20,000 people, who have a vast influence in assisting subscriptions for any purpose that comes before them, and that is the enemy they will have to encounter. It is not this Board. We may sit still. . . . You will take care of yourselves in this matter, and as long as the Canadian Pacific comes to attack us in our own territory and to promote schemes of aggression against us, I know the consequences they will bring upon themselves.

Despite this threat of financial discomfiture the Canadian Pacific went on with its work of obtaining an outlet in Western Ontario. As a temporary expedient it obtained running connections with the Canada Southern. Later, through obtaining the Western Ontario Pacific, which had been chartered in 1885 to build from Woodstock to Windsor, the desired connection was obtained, the line to Windsor being completed in 1890.

The amalgamation of the Grand Trunk with the Great Western was only part of the campaign which the Grand Trunk was waging. In the period shortly prior to the chartering of the Canadian Pacific there had been tentative negotiations between the Grand Trunk and the Midland. The main line of the latter extends from Port Hope on Lake Ontario to Midland on Georgian Bay, thus affording a connection between the upper and lower Lakes. After various vicissitudes, the credit of the enterprise having fallen low, a combination with the Toronto and Nipissing, the Grand Junction, and the Whitby and Port Perry was worked out between 1876 and 1879. The system, thus consolidated, having a mileage of 470 miles, came under the control of the Grand Trunk in the beginning of 1884. It was expected

that this would give in combination with the Grand Trunk the shortest route from the upper Lakes to Montreal and the Atlantic. The expected advantage to the Grand Trunk was succinctly put by President Tyler, who said : 'The affiliation of such an important combination to the Grand Trunk System must result in great advantage to the Grand Trunk Company, in securing it the traffic to which it is entitled, and in preventing injurious competition with which it has of late been openly threatened.'

The next step in the strategic expansion of the Grand Trunk came in 1888. The lines which were now brought under the control of the Grand Trunk were the Northern and the Hamilton and North-Western. The earlier history of the Northern has been referred to. The Hamilton and North-Western, which was chartered in 1871, extended from Port Dover on Lake Erie to Collingwood on Georgian Bay. The Northern and the Hamilton and North-Western had entered into a working agreement in 1879. The joint system controlled in all about 493 miles.

While the acquisition of the Midland system had given the Grand Trunk control of a network of branches in the eastern part of Ontario, the acquisition of the Hamilton and North-Western was important as controlling the entrance from the northern part of the province into Toronto and the portion of Ontario west thereof. In 1881 parliament chartered the so-called 'neutral link'—the North-Western and Sault Ste Marie Railway. The object of this was to connect the railway system of Canada with that of the North-Western States, and it was intended that this line should be open to all companies that would connect therewith and afford equal traffic facilities to all. But the independence of this railway, whose name was changed in 1883 to the Northern and Pacific Junction, was short-lived. It was completed in 1885. In 1887 it was leased to the Northern and Hamilton and North-Western. With the transfer of these lines to the Grand Trunk this line also passed. It extended from Gravenhurst to North Bay, and this gave the Grand Trunk control of the most available route from the northern portion of the province to Western Ontario, thus

checkmating the Canadian Pacific. In 1886 the Grand Trunk had under consideration a project for a line from Gravenhurst to Sault Ste Marie with a view to affording a short outlet from the North-Western States to the seaboard and the further idea of affording the Grand Trunk an ultimate connection with the Northern Pacific. At the same time the Canadian Pacific Algoma Branch to Sault Ste Marie was under construction.

As a result of the process of construction and acquisition which went on between 1881 and 1890, practically all the railway mileage in Ontario, with the exception of that controlled by American interests, was divided between the Grand Trunk and the Canadian Pacific.

The hostility of the Grand Trunk exercised an adverse effect upon the credit of the Canadian Pacific. In the numerous pamphlets of the time, which, if not inspired by the Grand Trunk, were at least issued by partisans of that enterprise, the idea was spread that the Canadian Pacific was a mere speculative enterprise doomed to failure. The value of its lands was depreciated. It was stated that for 'six months in the year the road will be an ice-bound, snow-covered route.' The feeling existing in the minds of the unfortunate investors of the Grand Trunk that they had been unfairly treated, was reinforced by the utterances of such a weighty financial journal as the London *Economist*, which cited the chartering of the rival enterprise, which apparently threatened the existence of the Grand Trunk, as an example of unfairness. The Canadian Pacific stocks fell, between December 1883 and June 1884, from fifty-seven to forty-two. The trade depression in 1884, which was the outcome of the speculative development of 1880-82 and the deficient harvest of 1883, further aggravated the evil credit not only of the Canadian Pacific, but of the Grand Trunk as well. In a period of six months the stocks of both lines were depreciated by $38,000,000.

The Canadian Pacific approached the government for assistance in November 1883. To keep up its credit it desired to maintain the value of its stocks. Accordingly arrangements were made whereby the railway deposited $8,800,000 of

stocks with the government, and obtained from them a loan of $7,300,000, the total sum of $16,100,000 being held in trust by the government for the payment of a three per cent dividend during a period of ten years. The difficulties of the railway continued, and in 1884 it obtained a loan of $22,500,000 from the government. A further application for assistance was made in 1885. The condition was indeed serious. Failing the obtaining of funds from the sale of stock, money for the furnishing of terminal facilities had been raised on the personal security of the directors. In April 1885 the company had outstanding about $7,000,000 of notes maturing in two months, and no money was available to pay them. There was grave danger that all work would have to cease. The government now made a short term loan of $5,000,000. In 1886 the company made provision for the extinction of these loans, partly in cash and partly by a surrender of a portion of its land grant, which was taken over by the government at $1.50 per acre.

Manitoba and the Canadian Pacific

The disadvantages of the 'monopoly clause' had been pointed out when the Canadian Pacific charter was granted. The desire of the people of Manitoba for an independent connection with the American lines showed itself as soon as the Canadian Pacific was chartered. For in the same year, on the representation of the Canadian Pacific that the legislation was in violation of its charter, the Manitoba charters to the Winnipeg South-Eastern, the Manitoba Tramway Company and the Emerson and North-Western, which looked to obtaining a connection at the boundary, were disallowed. In addition the General Railway Act of 1882, under which there was power to charter a railway by letters patent to obtain such a connection, was disallowed.

The desire for an independent connection with the American lines remained unabated. As soon as the Canadian Pacific was completed there were complaints that the freight rates on outgoing wheat were excessive, and it was also stated that the existence of the monopoly clause deterred immi-

grants from settling in Manitoba. It was further contended by the province that the construction of an independent connection, such as the proposed Red River Valley Railway, was within the legislative competence of the province, and a resolution was moved in June 1887 by the Hon. John Norquay, the premier of Manitoba, stating that in the event of further disallowance by the federal government there should be an appeal to the crown. At the same time negotiations were entered into with the Northern Pacific with a view to obtaining a direct connection between Winnipeg and the American lines by way of the Red River Valley Railway.

The tension was great. In a letter from President Stephen to the shareholders of the Canadian Pacific on September 24, 1887, it was said: 'It would be absurd to urge that the completion of the 66 miles of railway now undertaken by the Government of Manitoba would ruin the C.P.R. system; but its construction would be a violation of the contract with this Company, and the directors feel it to be their duty to maintain the rights of the Company in the matter.' More embittered had been his words in his telegram of May 18 of the same year to Norquay, in which, after stating that the proposed comnection would be 'a breach of faith towards the holders of the $134,000,000 private capital invested in C.P.R. securities,' he emphatically said:

> If the mischievous agitation in favour of diverting the business of the North-West into American channels is continued, and the C. P. R. Co. is to be treated as the public enemy of the people of Winnipeg, the Company will at once take steps to establish their principal western shops at Fort William, which from an operating point of view has many advantages, leaving nothing at Winnipeg but the ordinary Division shops. Pray do not be mistaken. This is not an idle threat. It is a fixed purpose taken after full consideration.

While the railway thus stood on its rights under its charter, the people of Manitoba were so desirous of the independent outlet that they were dangerously near the verge of rebellion.

The Dominion government faced a difficult and delicate situation. In the negotiations which took place between the

representatives of the province and of the Dominion, Sir John A. Macdonald assured the Manitoba representatives that the monopoly clause was only a temporary measure pending the completion of the road and the securing of a development of traffic resources of Manitoba and the North-West Territories. But Manitoba would not recede. So in 1888 the Dominion government obtained the abrogation of the monopoly clause by agreeing to guarantee interest at three and a half per cent on $15,000,000 of bonds running fifty years and secured on the unsold portion of the company's land grant. The proceeds of the bond sale were to be applied to improvements of the main line, acquisition of rolling stock and terminal facilities.

The Dominion and the Provinces

The Quebec resolutions, on which the British North America Act was based, implied the intention that the government should be concerned with railways of general interest. For the general government was to have power *inter alia* to make laws respecting 'lines of steam or other ships, railways, canals, and other works connecting any two or more of the Provinces together, or extending beyond the limits of any Province.' The British North America Act gave the federal government a wider scope, for while the provinces received exclusive power to legislate regarding local works and undertakings other than 'lines of . . . railways . . . connecting the Province with any other or others of the Provinces or extending beyond the limits of the Province,' an element of elasticity, widening the scope of the jurisdiction of the federal government, was introduced by the provision which authorized the parliament of Canada to declare railways 'wholly situate within the Province [either] before or after their execution . . . to be for the general advantage of Canada.' While this element of elasticity was introduced the use of it was intended to be reserved for exceptional situations.

The differentiation between works of local and of general interest had not hitherto existed, unless in the Canadas, where the provisions of the Guarantee Act, as modified, were

applicable only to works regarded as of general interest. The first large expenditures by the Dominion on railway enterprises were in aid of those which were of inter-provincial interest. It is true that parliament did grant aid to the Canada Central, but this was justified on the ground that it formed a necessary part of an inter-provincial work. The general attitude, however, during the earlier period, as expressed by Mackenzie, was that it was not the intention of the Dominion to subsidize roads already subsidized by the provinces.

But while a fairly sharp delimitation between inter-provincial and intra-provincial lines is provided by the British North America Act, the line of demarcation has tended to become less sharp with the advance of years. Purely provincial lines have looked more and more to the Dominion for assistance, and the Dominion policy of granting subsidies to the railways has played a central part in the policy of railway aid throughout Canada. With few exceptions every session of parliament has brought its subsidy act, wherein have been included many enterprises of purely local interest ; and along with this has gone the granting of Dominion charters to local enterprises which are for the 'general advantage of Canada' only in the sense that the part is of advantage to the whole.

Nova Scotia had assumed that when Confederation was effected the provincial government would no more be concerned with the construction of railways. It was stated by the provincial secretary in 1872 that 'The union of the Colonies having placed the whole revenue of the country in the hands of the Dominion Government, it had been generally supposed that the duty of constructing railways would devolve upon the Central Government, and that they would be only too glad to extend the public works of the country with the funds in the Dominion Treasury.' Five years had passed without any local development work being constructed, and the province now found itself forced to embark on a policy of railway aid in which there was a co-operation of land grants and annual cash payments.

In 1873 capitalists would not engage in railway con-

struction without additional government aid, and in the following year the policy of cash payments of from $5000 to $6000 per mile was adopted. In 1874 the Windsor and Annapolis was in bad shape ; in 1877 the Eastern Extension had come to a standstill. The government found it necessary to make a loan to the Western Counties Railway in order to prevent the aid already extended being totally lost, at the same time giving a bond guarantee to the Windsor and Annapolis.

There was a lack of uniform policy as well as a difficulty in the way of obtaining through transportation. For example, the Western Counties—which was intended to be an extension of the Windsor and Annapolis to Yarmouth—and the Windsor and Annapolis, two railways which formed the chief means of transport in the western counties along the Bay of Fundy, had such strained relations that no adequate traffic arrangements could be obtained. The government's activity in railway aid had doubled the debt between 1872 and 1882 ; the failure of the enterprises undertaken had necessitated government intervention ; certain interests had thereby been acquired ; five hundred miles of the projected system remained to be completed. The government attempted in 1882 to transfer all its rights and interests in the railway, which it had aided, to an English company for the consideration of £277,400, the government undertaking certain bond guarantees and reserving the right of repurchase. The arrangement, however, fell through.

While works of local interest had thus been undertaken by Nova Scotia, it had been under protest. In 1882 the provincial secretary, in the debate on railway consolidation, reaffirmed the position in regard to the Dominion's responsibility for local railway construction which had been set forth ten years earlier.

The Dominion Subsidy Policy

It was at this juncture that the new phase of the Dominion subsidy policy of 1882 was adopted. Without any declaration that they were in the general interest, a grant of $3200

per mile was made to various intra-provincial lines. The intention was to provide the means for the supplying of the steel, it being estimated that a mile of railway required about 100 tons of rails and fastenings, which then cost about $32 per ton. By the legislation of this year $1,638,000 were granted in subsidies to the provinces generally.

The assistance subsequently given to Nova Scotia and to Quebec is of especial interest. As has been seen, the Eastern Extension was one of the lines in which Nova Scotia was concerned. In 1884 this railway was purchased by the Dominion government for $1,200,000, together with a payment for the rolling stock and equipment. In addition the Dominion government undertook in 1889 the construction of the twenty-two miles of the Western Counties Railway between Annapolis and Digby, a vote of $500,000 being applied thereto. Before the sale of the Quebec lines making up the Quebec, Montreal, Ottawa and Occidental, the provincial government had offered, in 1880, to sell the system to the Dominion for $7,000,000. Reference was made to the fact that the Dominion had already subsidized the Canada Central. It was claimed that equal justification existed for a subsidy to the line from Quebec to Ottawa. The Dominion, it was claimed, should either buy the road or grant it a subsidy equal to that granted to the Canada Central. In 1884 the Dominion accepted this contention. Since the railway formed a link in a connecting line between the Atlantic and the Pacific with the Intercolonial and the Canadian Pacific, it was to be regarded as a national work. Accordingly an annual subsidy at the rate of five per cent on a capital sum of $2,394,000 was granted in 1884 to recoup the province.

The general subsidy policy of the Dominion underwent no important modification down to 1897. In some instances, instead of cash payments in full, annual payments extending over a period of years were made, as in the case of the Canadian Pacific short line between Montreal and New Brunswick, which was granted, in 1889, a payment of $250,000 a year for twenty years. In 1884 a land grant policy was adopted as a complement to the cash assistance. In this year the Hudson Bay Railway was granted 6400 acres per mile within

Manitoba, and 12,800 acres per mile in the North-West Territories.

With the extension of its assistance the Dominion government had in 1883 undertaken to extend its control. While many of the railways assisted had been of purely local interest, a justification for such assistance would have been found in declaring them works for the general advantage of Canada. An attempt to supply this logical justification, while at the same time extending the control of the Dominion, was made in the legislation of 1883, which declared in substance that all the main lines of railway in Canada were 'works for the general advantage of Canada,' *and that the branch lines of railways then or thereafter connecting with or crossing these lines or any of them were also 'works for the general advantage of Canada.'* At once there was objection from Ontario. The legislature of Ontario stated in 1884 that railways within the province had been assisted by the province and the municipalities to an amount exceeding $14,000,000; that this aid had been granted on the faith and understanding that they were to be under provincial control; and since the Dominion government had by the application of its legislation declared they were for general benefit, the moneys already expended on them should be refunded. A similar position was taken by various municipalities of Ontario.

This question was brought to the front again in 1887, when the Dominion government declared the Western Counties Railway in Nova Scotia to be 'a work for the general advantage of Canada.' The province urged that, following the policy adopted in the case of Quebec, there should be refunded to it the $680,000 which had been expended in aid of this railway. The declaration that the railway was for the general advantage of Canada was regarded as a high-handed action, since the consent of the province had not first been obtained. It was declared that 'in recognizing the Western Counties Railway as a work for the general advantage of Canada the Parliament of Canada virtually admits that the public aid for the purpose of constructing such railway should have been given from the treasury of the Dominion and not from the treasury of the Province.'

The Dominion government, while it has dealt with particular cases, has not laid down a general policy of responsibility for the return of local aid expended prior to a railway being declared a work for the general advantage of Canada, In 1884, when the grant to Quebec was under consideration. Edward Blake had moved an amendment in favour of the general principle of return in such cases. This was not accepted by the government. When it was further suggested that the legislation of 1883 would invalidate the bonus arrangements which had been entered into by the provinces and municipalities in respect of the roads declared to be for the general advantage, the government dissented from this opinion.

But, while there was at first some friction over the attitude of the Dominion to works declared to be for the general advantage, the matter is no longer of urgent discussion ; for more and more of the purely intra-provincial works seek Dominion charters, partly because of the desire for assistance from the Dominion, partly because of the assured better status it gives them in the money markets of the world. At the present time Dominion assistance is in some instances courted, in others demanded as a right. In 1887 British Columbia petitioned the Dominion government to subsidize the Shuswap and Okanagan Railway because it would be not only of advantage to the mining districts, but also of advantage in case of war. The latter argument was obviously an afterthought. British Columbia has also taken the position that for every dollar of aid contributed to railway development by the province two should be contributed by the Dominion. The grounds on which this contention are based are the great cost of railway construction in British Columbia, the relatively small revenues of the province, and the small proportion of the Dominion expenditures received by British Columbia.

Between 1881 and 1896 the railway mileage of Canada increased by 9127 miles—from 7260 to 16,387. Deducting from the mileage of 1896 that pertaining to railways then or later embraced in the larger railway systems, it appears that during the period in question 1500 miles of railway of purely

local interest had been aided by the Dominion either singly or in concert with the provinces and municipalities. The Dominion and the provinces in co-operation contributed thirty-four per cent of the nominal cost of this mileage. If the actual cash cost of construction could be obtained, it would be found that the government contribution was much greater. How purely local these railways so aided were may be seen in the fact that their average length was only forty-two miles. One line aided was only three miles in length. A number of them were nothing more than facilities of particular industrial businesses.

In the granting of subsidies to railways of local interest during this period no care was taken to investigate the necessity of the work and the adequacy of the means for construction. In many cases the only apparent reason for granting a subsidy was that the promoters asked for it. The Royal Commission of 1886, whose recommendations led to a revision of the railway law, recommended that there should be required adequate proof of the ability to complete the railway either by subscription of capital or deposit of a guaranty fund to be released as the work progressed. While the Dominion has made use of this advice in connection with the subsidies to works of national interest, such procedure has not been deemed necessary in the case of assistance to works of local interest.

In the majority of the railways constructed under the new subsidy policy practically all the cash that went into the enterprise was obtained from the subsidies and the bonds. Often the terms of a contract have been that the contractor shall take the Dominion, provincial and municipal subsidies and some percentage of the bonds. Sometimes a portion of the stock is thrown in as an extra inducement. Of the examples available two will serve. In 1886 a contractor undertook to build 100 miles of the Baie de Chaleurs for $20,000 a mile. He was to receive the subsidies amounting to $6400 a mile, $13,600 a mile of first mortgage bonds and one-half the capital stock. In 1890 an investigating committee of the legislature of Quebec said this company had relied entirely 'on the money to be obtained from the Govern-

ment and the municipal corporations to carry on their enterprise.' This road, which had been chartered by the Province of Quebec in 1872, had received from the Dominion and the Province of Quebec $1,474,800 in aid of 100 miles of railway. In 1896 the company, on account of the difficulties in which it found itself, proposed to transfer the railway to the Dominion government. The government operated it from December 1896 to May 1897. During this period the running expenses exceeded the receipts by 200 per cent. The construction contract of the Brockville, Westport and Sault Ste Marie specified, in addition to the subsidies, $25,000 per mile in stock and $25,000 in bonds.

The attitude of the Dominion, which was shared by the provinces, was that the granting of a subsidy was not to be considered as the expression of an official opinion with reference to the probable success of a railway. For the bondholder the rule was to be *caveat emptor*. But governments cannot so lightly escape the consequences of their acts. The careless granting of aid hurt Canadian credit. While the government did not concern itself with how the remaining portion of the necessary capital was to be raised, the English bondholder regarded the government as a partner in the enterprise, not as a careless distributor of largesse. The plaint in 1889 of a bondholder of the Caraquet Railway presents the bondholder's view : ' We had surely a right to assume that in making a free gift of nearly £80,000 towards the construction of the line, the Dominion and New Brunswick governments were satisfied of its importance and would see that the money was properly and judiciously expended.'

The criticisms applying to the enterprises in which the Dominion and the province co-operated apply to the province or to the Dominion individually as well. In 1888 the Albert Railway, which had been chartered by New Brunswick, ceased operations from sheer inability to earn its running expenses. This road, some forty-five miles in length, had received $455,000 from the province and $70,000 from the municipalities ; in addition $600,000 in bonds had been issued. To show how inadequate was the investigation of

the likelihood of traffic or future necessity of the enterprises aided, one instance—and that by no means the most flagrant —will serve. In 1882 the Dominion government agreed to grant to a company which undertook to construct a ship-railway [1] across the Isthmus of Chignecto, from the Atlantic to the head of the Bay of Fundy, a subsidy of $150,000 a year for twenty years after the completion of the work. From time to time extensions were made ; finally, in 1898, it was decided to grant no further extension. In the meantime there had been sunk in the enterprise $3,500,000 of English capital. It is clear that the promoters entertained no illusions with reference to the responsibility of the government. They knew aid was contingent upon the completion of the enterprise. But to the investor the promise of aid appeared as a certificate of the necessity of the work. Engineers had indeed stated that the work was feasible. But to an engineer feasibility is simply a matter of money. It is the volume of traffic which measures the real feasibility of an enterprise. In the early fifties the project of a canal across the isthmus had failed to obtain support because it was feared that there would not be sufficient traffic through the canal to warrant its construction. Canada had forgotten this in 1882. If the ship-railway had been completed it would have been unable to meet its fixed charges.

VI

RECENT RAILWAY DEVELOPMENT

The Influence of 'Wheat'

THE modern period of Canadian railway expansion dates from 1897. Since that year passenger business has doubled, while freight business has trebled. Since 1897 the railway problem may be summed up in one word —WHEAT. Eighty per cent of Canada's land area, twenty-four per cent of her population, and forty-two per cent of her railway mileage are to be found in the provinces west of

[1] See 'Shipping and Canals' in this volume.

the Great Lakes. In addition 6000 miles of railway were under construction in 1912. The large influx of population attracted by the lure of the western wheat-fields outruns the railway. The settler at Grand Prairie in the Peace River country was, in 1912, 260 miles from a railway ; in 1910 he was 400 miles distant ; in 1914 he expects to have a railway at his door. The railway pushes on to reach the settler, and every additional mile of track increases the difficulty of handling the output of his lands by way of the ports at the head of the Great Lakes. Years ago Sir William Van Horne said that the defect in the western railway development of Canada had been that it enlarged the hopper without enlarging the spout. His words are tenfold more apposite to-day. The ' spout ' east of Winnipeg is being widened ; the widening is not yet completed. The inadequacy of this ' spout ' was shown during the winter of 1911-12, when there passed through it the congested grain traffic of 1911.

The wheat belt of the Canadian North-West starts about 400 miles further west than the eastern limit of the wheat belt of the American North-West. There is comparatively little local traffic between Winnipeg and Fort William. The Canadian Pacific around the head of Lake Superior is essentially a traffic bridge. It is a line of sharp curves and difficult grades. The grain of the North-West cannot find its way to the seaboard by this line alone. It is true that the main reliance of the grain movement is on the Lake vessels. But as the grain district is opened up farther west, the longer rail haul lessens the effective period available for the Lakes. Between the close and opening of navigation the railway can handle only as much as is handled in ten days by the Lake boats during the navigation season. Consequently, as the transportation network extends farther and farther west the producer must look to new ' spouts.' The grain of the Peace River country will move west to the Pacific in order to go east to Great Britain.

In 1897 Western Canada was veritably length without breadth. Now, while we know that the northerly limit of the cereal belt dips down to about 49° near the mouth of the St Lawrence, it extends north to 62° near the Rockies. Wheat

SIR WILLIAM VAN HORNE

From the painting in Mr. Hyde's possession

has been grown as far north as 61°. Nowadays month after month—not year after year—brings its new tales of how the productive areas stretch farther north, and that to agricultural wealth there is being added the wealth of mineral resources. It is only since 1897 that Canadians have begun to know Canada. And the apparent flamboyancy of expression which the pessimistic home-dweller is apt to discount simply masks the fact that Canadians as a people are beginning to know Canada. A journey across the continent and some travelling on the expanding network of branch lines is a remedy for national dyspepsia. Before 1897 railway expansion meant completing the main line of the Canadian Pacific. Important as this was, the resulting development is still more important. The railways have been carrying on a truly national work. By giving the west breadth as well as length, they are assisting in the integration of Canada. Here, as in other cases, government aid and railway development go together, and the study of government policy and of railway expansion are closely interrelated.

British Columbia and the Yukon

The States to the south were actively interested in the mining resources of the Kootenay in British Columbia. The active interest of Spokane led to an extension of the Hill lines so as to afford a connection between Spokane and Rossland. The Pacific Coast cities of British Columbia, fearing the diversion of the Kootenay trade to Spokane, actively advocated, during 1896, the construction of a through line east and west in Southern British Columbia. The rail and water connection afforded by the Canadian Pacific was circuitous. In direct mileage Vancouver was twice as far from Rossland as was Spokane. But where the journey from the latter city could be made in seven hours, from Vancouver it took two days. The legislative assembly of the North-West Territories also favoured a line to the Kootenay. Not only did this region possess extensive gold-mining properties, but it had also large coal-fields and extensive silver and lead deposits. The opening of this route would stimulate enter-

prise, increase the business of Canadian distributing centres, and permit the agricultural products of the Canadian territories to displace those of eastern Washington.

Fear of the monopoly of transportation facilities then possessed in the North-West by the Canadian Pacific made people unwilling to have the proposed railway built as part of that system. The desire was either for an independent, privately owned line or for one under government management. The Dominion government decided that an independent system would not do. So in 1897 the Canadian Pacific was granted a subsidy of $11,000 per mile to construct, not the through line which many had desired, but a railway from Lethbridge to Nelson, a distance of 330 miles, which would connect with the lakes of the Kootenay district.

It was part of the subsidy agreement that the rates on this new line should be subject to the revision of any regulative tribunal thereafter created. When the Canadian Pacific was chartered the general railway law had contained a provision that rates might be regulated by parliament, but not so as to produce a return of less than fifteen per cent on the capital actually expended. In the Canadian Pacific charter this was limited to ten per cent, this being represented as an extension of the regulative power of parliament. However, in the revision of the Railway Act in 1888 the fifteen per cent clause was struck out and the ten per cent clause remained in the Canadian Pacific charter, thus exempting its rates from reduction until this figure was reached. It was now made a condition that, in consideration of the subsidy, reductions of from ten per cent to thirty-three and a third per cent should be made on specified commodities moving over the main line of the Canadian Pacific.

By the discovery of gold in the vicinity of Dawson, in the Yukon, and the inrush of miners in 1897 and 1898 Canada was confronted with a condition in which provision had to be made for the establishment of civil government and the protection of life and property. The Argonauts of the North rushed in by either an all-water journey by way of the Yukon River from St Michaels, or overland from Dyea and Skagway to the Yukon, and thence by the river to Dawson.

These routes threatened to divert the Yukon trade from the Pacific Coast cities of Canada. Dyea and Skagway being located in the then disputed territory, a Canadian railway from either of these points was not feasible. Early in 1898 a mixed rail and water route from the Stikine River to Teslin Lake was proposed. Out of a total distance of 676 miles, 325 were to be provided for by a railway. It was stated that it was urgent that there should be immediate construction. While the mouth of the Stikine River was in United States territory, it was stated that Canada had navigation rights which were guaranteed by treaty. Accordingly an agreement for the construction of the railway was entered into with the firm of Mackenzie and Mann, and a grant of 25,000 acres per mile in the Yukon in aid of the enterprise was promised. This is noteworthy as the last land grant undertaken by the Dominion government. Mackenzie and Mann were to have mining rights in these lands, and were to pay a royalty on the gold extracted. It was recognized that there must be for a time high rates, for it was provided that the governor in council should have a limited right of revision of rates during the first seven years, and that the regulative provisions of the Railway Act should not apply for ten years. No competing charter was to be granted for five years.

The land grant was a highly speculative venture. However, the exaggerated ideas of the wealth of the Yukon then prevailing caused the proposition to be regarded as an extravagant one; and so, while the legislation passed the House of Commons in 1898, it was defeated in the Senate.

A rail connection between Skagway, Alaska, and Lake Bennett, in the Yukon, was completed in July 1899. The line was subsequently extended to White Horse, a total distance of 113 miles. This line, known as the White Pass and Yukon, was constructed by an English company.

While the abrogation of the 'monopoly' clause of the Canadian Pacific charter had been followed in 1888 by the entrance of the Northern Pacific into Manitoba, and while rate concessions had thereby been obtained, the desire for a lower rate to the Lakes remained unsatisfied. In 1899 the

conservative party, which was successful in the provincial election of that year, declared for 'government ownership of railways so far as practicable.'

The Canadian Northern

The movement for government ownership brought to the front the names of Mackenzie and Mann. These railway builders, the record of whose achievement is part of the romance of Canadian railway transportation, had acquired in 1896 the charter of the Lake Manitoba Railway and Canal Company. This line had been chartered in 1889, and had received a land grant from the Dominion. Nothing had been accomplished. Then it came into the hands of Mackenzie and Mann, and by December 1896, 125 miles of line —the beginning of the Canadian Northern system—were in operation. There were acquired in quick succession the charters of the Winnipeg and Hudson Bay, the Manitoba and South-Eastern, the Ontario and Rainy River, and the Port Arthur, Duluth and Western. The lines in Manitoba had been voted land grants by the Dominion, but nothing had been accomplished. The Ontario and Rainy River, which was chartered to open the mining districts of the Rainy River country in North-Western Ontario, had received cash subsidies from both the Dominion and Ontario. When the line was acquired in 1897, the charter had been in existence eleven years. In 1898 the Greenway administration, which had thought of obtaining an independent outlet to Duluth, decided to assist the Mackenzie and Mann line to Port Arthur by bond guarantee. The consolidation of these different properties now created the Canadian Northern system.

Manitoba entered into negotiations with the Northern Pacific to lease the 354 miles of its system in Manitoba. The Canadian Pacific submitted a proposition to take over these lines for a period of thirty years, paying therefor whatever rental the government might have to pay the Northern Pacific, and in addition a bonus of $10,000 a year for the first ten year period, $20,000 a year for the second, and

$25,000 a year for the third. In addition it undertook to reduce its local rates by fifteen per cent and to make reduction on specific commodities, including a reduction of four cents per bushel on wheat to Fort William. These reductions were to be worked out on a sliding scale which would be finally effective in 1907. The Northern Pacific had proposed that the Manitoba government should build a line to Duluth, and that thereafter the government and the Northern Pacific should enter into a partnership sharing the profits and losses on the lines concerned.

In 1901 Manitoba concluded an arrangement whereby it took over the lines of the Northern Pacific lying within the province on a 999 years' lease for a payment ultimately amounting to $300,000 a year, with a reserved right to purchase these lines for $7,000,000. The lines so acquired were turned over to the Canadian Northern, which agreed to pay the government the rental it had undertaken to pay to the Northern Pacific. The government undertook to guarantee interest on the bonds of the Canadian Northern between Winnipeg and Port Arthur. The Canadian Northern agreed to give reductions amounting to fifteen per cent of its tariff rates then in force, other than on grain, from and to points in Manitoba to and from Fort William and Port Arthur. In addition provision was made for a ten cent rate on grain to the head of the Lakes. The agreement, involving a line concerning two provinces as well as a route through a portion of the United States, required and received the sanction of the Dominion parliament. The Canadian Northern line from Port Arthur to Winnipeg was completed in February 1902, and in April of the same year the reduced rates were put in effect.

The Canadian Northern, starting with small beginnings, had been managed with singular strategic skill. The conditions in Manitoba were, at the same time, singularly opportune. The inclusion in its system of the Northern Pacific lines in Manitoba had given it a mileage of 1240 miles. It had started on its way as a transcontinental system before its great competitor had thoroughly appreciated what its plans were. It proceeded to acquire isolated charters here and there whose

significance developed only when they were incorporated in the general system. Its plans came out when the arrangement with Manitoba was completed. In 1902 unsuccessful negotiations were undertaken looking to obtaining provincial assistance in British Columbia. The project included building from the Yellow Head Pass to Victoria, the acquisition of the Esquimalt and Nanaimo on the Island of Vancouver, then owned by the Dunsmuir family, but since acquired by the Canadian Pacific, being included in the scheme.

By 1903 the lines of the Canadian Northern had crossed the boundary of Manitoba into the then North-West Territories. It was now successful in enlisting the support of the Dominion, which undertook to guarantee bonds to the extent of $13,000 a mile on 500 miles in the Territories. Since then there has been a record of constant expansion. In 1912 it had lines constructed west of Edmonton and was rapidly approaching the Pacific Ocean. In 1910 it concluded an arrangement whereby the Province of British Columbia undertook to guarantee interest on $35,000 of bonds per mile, on approximately 600 miles in that province. It has also received land grants from Ontario on the portion of its line between Port Arthur and Sudbury. It has lines extending from north of Sudbury to Toronto. It is building east from Toronto to Ottawa. It has a line from Ottawa to Hawkesbury, and its lines from that point to Montreal and Quebec are being linked up. In Quebec it controls the Quebec and Lake St John, a provincially incorporated road. Between Quebec and Nova Scotia there is at present a gap in the system ; but in Nova Scotia it owns the Halifax and South-Western, which was subsidized by the province.

The new provinces in the North-West have aided its branch lines by bond guarantees. In 1912 the Dominion undertook to assist the portion of the line in British Columbia on which the province had undertaken the burden of guarantee by an additional cash subsidy of $12,000 per mile. In addition, during the session of 1911, in order to facilitate the construction of the missing link around the head of Lake Superior between Port Arthur and Sudbury, the Dominion undertook to guarantee interest on the bonds of about 1000

miles of the system east of Port Arthur at the rate of $35,000 per mile.

Since 1902 it has developed from 1240 miles to 4800. Seventy-one per cent of its mileage lies west of Lake Superior. The Canadian Pacific, with a mileage of 10,210, has fifty-six per cent of its mileage west of Lake Superior. In the west, by running north of the Canadian Pacific, it has opened up a fertile northern wheat belt. Between Battleford and Edmonton it has been called the 'line of a hundred wheat stations.' It has extended its system by building branches throughout the prairie provinces. In its journey around Lake Superior its route traverses for approximately half its distance the clay belt of Ontario, where the local traffic in lumber and agricultural products affords it great assistance as compared with the lean traffic of its competitor, the Canadian Pacific, on its Lake Superior division. Through Eastern Canada it is connected with all the large industrial and trading centres. In British Columbia its line, bending south-westerly to the Pacific Coast cities, will assist in giving that connection between Southern and Western British Columbia and the northern portions of the province which the lack of north and south lines has hitherto prevented.

The Grand Trunk Pacific

In 1895 the Dominion granted a charter to the Trans-Canada Railway to build from Quebec to the Pacific Ocean at Port Simpson or Port Essington. In the connection with Quebec, the Quebec and Lake St John Railway was to be utilized. The matter hung fire until 1901, when a memorial favouring the enterprise was presented, and provision was made for a Dominion subsidy to the first sixty miles to be built west from Roberval in the Province of Quebec.

This project was, however, of short-lived interest. The Grand Trunk railway, since it came under the management of the late Charles M. Hays in 1899, had been passing through a period of reconstruction and rearrangement. By 1902 its mileage stood at 3154 miles. Hays was impressed by the fact that notwithstanding its network of lines in the western

peninsula of Ontario, the Grand Trunk was lacking in through connections. And so he looked to the West.

The splendid success of the Canadian Pacific had shown the traffic possibilities of the Canadian North-West. Beginning about 1900, the falling off in the supply of free land in the North-Western States had attracted the attention of the farmers of that section to the farming possibilities of the Canadian North-West. This, co-operating with the lavish advertising campaign of the Dominion department of the Interior, as well as such personally conducted campaigns as that of Colonel Davidson, now the land commissioner of the Canadian Northern, had led to a northern trek. The American farmer emigrated with his farm implements and household belongings. The change of location involved no change of methods. It was rather a change of farms than a change of countries. In addition, immigrants began to pour in from European countries. Most of these were attracted by the North-West.

On November 3, 1902, the Grand Trunk submitted to Sir Wilfrid Laurier a proposition for the construction of a line of railway from North Bay on the Grand Trunk system in Ontario to the Pacific Coast at or near Port Simpson. It was stated that a second transcontinental railway was necessary to handle the expanding business of the North-West in order to prevent its diversion to American channels. In order to ensure this movement of traffic over an all-Canadian route to the Atlantic seaboard, the Grand Trunk stated its readiness to provide for an interchange of traffic with the Intercolonial at Montreal, or to make such other arrangement as the government might desire. A government grant of $6400 and 5000 acres of land per mile was asked for.

When the discussion of the matter became public it elicited the opposition of existing lines. James J. Hill, whose expanding system was obtaining a foothold in British Columbia, opposed the project, saying, ' It is my judgment that another transcontinental railroad cannot profitably be built across Canada for the present.' The attitude of the liberal party, which soon became sponsor for the work, was epitomized in

La Patrie, a paper owned by J. Israel Tarte, then the minister of Public Works :

> We want to see the North-West and Manitoba developed, but we want to see the old Provinces and the St Lawrence route developed . . . we shall most emphatically oppose . . . all attempts to divert towards American ports and railways the trade of Canada.

The government refused to grant a land subsidy or a cash bonus. In the charter granted in 1903, after a long discussion, an essential modification was introduced. Instead of providing that the line of railway was to terminate at North Bay, access to the Canadian seaboard being obtained therefrom by means of the lines of the Grand Trunk system and the Intercolonial, it was now provided that the line should be continued east from Winnipeg to Moncton, New Brunswick. From Winnipeg to the Pacific Coast the road was to be built by the Grand Trunk Pacific. From Winnipeg to Moncton the line was to be built as a government work under the name of the National Transcontinental. The government undertook to guarantee interest on bonds to seventy-five per cent of the cost of construction, but not exceeding $13,000 per mile on the prairie section and $30,000 per mile on the mountain section. It was further provided that the section known as the National Transcontinental was to be leased on completion to the Grand Trunk for a period of fifty years. For the first seven years of the lease the Grand Trunk was to pay no interest. During the remaining forty-three years the railway was to pay a rental of three per cent on the cost of this work. But it was provided that, if for the first three years of this forty-three year period the net earnings were insufficient to pay the government rental, then these rentals were to be capitalized and added to the cost on which the railway was to pay rental. The government reserved the right to grant running rights over either or both sections.

The company agreed that all freight originating on the line of railway or its branches, not otherwise specifically routed by the shipper, should, when destined for points in Canada, be carried entirely on Canadian territory ; that the through rate on export traffic from the point of origin

to the point of destination via Canadian ports was not to exceed that contemporaneously in force by United States ports; all such traffic not otherwise specifically addressed by the shipper was to be carried to Canadian ocean ports.

The terms contained in the legislation of 1903 were regarded by the Grand Trunk management as being too rigorous considering the condition of the money market. A rearrangement of terms was made early in 1904. The essential modification was that in the case of the bond guarantee on the mountain section the maximum limit of $30,000 was removed, the government now being liable for a bond guarantee of three-fourths of the cost.

Although the shareholders of the Grand Trunk had been assured by Sir Charles Rivers Wilson that 'the Grand Trunk will be in the very foremost rank for securing itself an ample participation in the rich traffic both east-bound and west-bound which will be derived from the cultivation of this vast area and the requirements of its constantly growing population,' there was a strong feeling among them that the government had not been sufficiently generous, and it was not without difficulty that their acquiescence was obtained. Here again the personality of Hays dominated the situation.

In the discussion in parliament on the amended agreement of 1904 the conservative party, under the leadership of R. L. Borden, took the position that the government was too prodigally assisting an enterprise whose route and resources had not been determined with sufficient accuracy. Borden also claimed that instead of ownership by a private company a policy of government ownership should have been followed, and he said 'that if the conservative party are returned to power at the next general election they will enact such legislation as will enable the will of the people to prevail over this corporation . . . however powerful it may be.'

While it has been the fortune of the Canadian Northern to move on without becoming an issue in politics, and to receive aid from all governments irrespective of politics, the Grand Trunk Pacific has been tied up from the outset with the fortunes of political warfare. In the general election of 1904, in which the liberals were successful, the issue was the

railway policy of the government. R. L. Borden reaffirmed his belief in the necessity of government ownership, stating that the people still had power to rescind the bargain, and that if popular sanction were given to the agreement it would postpone government ownership for a century. The conservatives attacked the guarantees of the all-Canadian route as illusory. Sir Wilfrid Laurier said the route to the seaboard was necessary to make Canada independent of American lines. He affirmed the necessity of private ownership, pointing out the greater elasticity of private ownership in the matter of development of traffic, and thus summed up his position: 'Governments can build railways—I have no fault to find with that—but Governments cannot operate railways.'

At Moncton, New Brunswick, a connection with the Intercolonial is obtained. The line then proceeds by the most direct practicable route to Quebec. It is necessary to run north of the north-east angle of Maine. At this point it is only about one hundred yards north of the international boundary. Its more direct route between Quebec and Moncton will increase the competition, which the Intercolonial already meets, because of the Canadian Pacific short line across Maine. The railway is to cross to Quebec by the Quebec bridge which is at present in process of construction. From Moncton to Winnipeg, a distance of about 1800 miles, the line runs south of the forty-ninth parallel. The route runs through an unsettled portion of Quebec. Between the Quebec boundary and Lake Nipigon there is a belt of some 16,000,000 acres of habitable land, a large part of which is timbered. The clay belt of Ontario which will be traversed has great possibilities in the way of mixed farming. A branch now constructed connects the main line with Fort William. The northerly and more direct route taken makes the distance from Winnipeg to Quebec the same as from Winnipeg to Montreal by the Canadian Pacific. From Winnipeg west to Edmonton the railway traverses the wheat belt. In Saskatchewan and Alberta a vigorous policy of branch line construction to the south is being pursued. After crossing the Rockies the railway enters the rich interior valleys of Central British Columbia, which contain 2,000,000 acres of arable land.

From Fort George in the Nechaco Valley it will have a connection with Vancouver by an independent but friendly line —the Pacific Great Eastern. The western terminus is reached at Prince Rupert, which has been selected in preference to the original terminus, Port Simpson. Prince Rupert lies twenty-five miles farther south and has the advantage of a magnificent harbour, much more commodious and safe than that possessed by Port Simpson. The advantage of this will be manifest when direct traffic with the Orient is opened, since Prince Rupert is five hundred miles nearer Japan than Vancouver.

The railway has so far proved much more expensive than was anticipated. A government loan of $10,000,000 was necessary in 1909. In the endeavour to have the low grades which will permit maximum train-loads to be moved, greater expense has been incurred than in the construction of either the Canadian Pacific or the Canadian Northern. Where these roads have developed as the traffic has developed, it has been the policy of the Grand Trunk Pacific and the National Transcontinental to have the road bed and haulage capacity in the highest possible condition from the outset. The difficulties of construction were underestimated, and so the time for completion has been from time to time extended. The problem of greatest interest in connection with the line is to what extent it will be feasible from the point of view of traffic to haul grain ' all-rail ' to the Atlantic seaboard.

The importance of wheat in connection with the western railway development is also emphasized by the Hudson Bay Railway. This work was begun in 1911. Since the early eighties this railway has been a fixed article in the transportation creed of Manitoba and Saskatchewan. The advantages of the shorter route by the Hudson Bay, and the lower rates thereby to be obtained, have been constantly urged. As an engineering work it is entirely feasible. The only question is its feasibility for traffic.

The Great Northern in Canada

Since 1899 the Great Northern system has built up a mileage in Canada of 573 miles. When the Crow's Nest

Railway was chartered, there was a strong desire in British Columbia for a direct Coast-Kootenay Railway, which would not only tap the mineral resources of the Kootenays, but also develop the country west of this district to the Pacific Coast. It was in the late nineties that James J. Hill began to appreciate the growing trade of British Columbia. In the endeavour to obtain an entry into Vancouver the charter of the Vancouver, Victoria and Eastern was obtained. By means of this line and other controlled lines such an entrance was made. The progress of the Hill system east from Vancouver by way of the Hope Mountains has been slow. It is actively engaged in construction in the Boundary country of British Columbia. This is being accomplished by short links connecting up with the Hill system in the United States. The railway swings back and forth across the international boundary avoiding mountains and seeking easy grades.

In 1906 Hill announced his intention to build from Vancouver to Winnipeg. He proposed to link up the various short lines which he had built north into British Columbia; then the main line of the Great Northern in the United States was to be used for a portion; and a line was to be constructed from Fernie to Winnipeg. The project is developing slowly. The map of the Great Northern shows a number of 'stub' lines stretching north towards the Canadian boundary. These in the section east of the Rockies all point towards the Canadian wheat-fields, and the process of construction will consist in linking up these different extensions. The policy to be pursued is to make the Canadian grain belt a feeder for the lines of the Great Northern in the United States.

The development of the Hill system in Canada attracts attention to the interrelation of the railway systems of Canada and of the United States. When the Kettle River Valley Railway in Southern British Columbia was applying to the Dominion for a charter, it was objected in parliament that this line would deflect traffic to American lines and make British Columbia trade subsidiary to the United States. In the development of Canada's transportation system there has existed on the one hand a desire to carry Canadian traffic by all-Canadian lines, and on the other hand to attract

United States traffic to Canadian lines. These mutually antagonistic positions have resulted in making the bonding traffic of increasing importance. In the east the most direct route between Quebec and the Maritime Provinces is across the State of Maine. When the Province of Ontario is reached direct lines between the Eastern and Western States run across the south-western and north-western portion of the western peninsula of Ontario. The Canadian Northern passes through Minnesota in order to pass round Rainy Lake. The Canadian Pacific has its 'Soo' line connections through Minnesota and Dakota to Pasqua on the Canadian Pacific line in Saskatchewan. Further interrelations are, as has been indicated, to be found in the section farther west. In point of mileage Canadian lines are at present more interested in the United States than American lines in Canada. West of Port Arthur Canadian lines cross the boundary at eight points, while American lines cross at fifteen; east of Port Arthur Canadian lines cross at twenty-three points, while American lines cross at one. The charter legislation of the Grand Trunk Pacific has endeavoured to ensure that Canadian traffic will move entirely over a Canadian line. Attractive as this is from a national standpoint, traffic has no sentiment, and seeks the direct route irrespective of national boundaries. In point of through traffic the American and the Canadian railways are competitive, and the railway interrelations back and forth across the boundary will be multiplied with the advance of years.

Government Railways

While the railway network of Canada has thus been expanding through private enterprise with the support of government aid, government construction has not been wanting. The Timiskaming and Northern Ontario, having in 1912 a mileage of 302 miles which have cost $17,600,000, was begun in 1902 as a colonization road intended to open up the clay belt of Ontario for settlement. The line begins at North Bay and in 1912 had reached Cochrane, where it intersects the National Transcontinental. In its progress

northward it had the good fortune to open up in its construction work the rich silver deposits of the Cobalt region which have given the mineral resources of Northern Ontario such prominence. The discovery of rich gold deposits in Porcupine and the construction of a branch thereto have made this traffic also subsidiary to the railway. The arrangement made in 1912 whereby the Grand Trunk Pacific obtains running rights over it to North Bay gives a through route between the North-West and the older sections of Ontario. There is now under consideration an extension northward from Cochrane. It is as yet uncertain whether the northern terminus will be on James or on Hudson Bay.

In 1904 application was made to the Dominion government by the Province of Ontario for the same subsidy assistance as had been granted to railways in other portions of Canada. It was contended that the construction of this line had facilitated the carrying in of supplies for the construction of the Transcontinental, and that this justified the subvention asked for. This was not granted. However, in the session of 1912 the Dominion proposed a subsidy of $6400 per mile, which passed the Commons but failed to pass the Senate.

The Dominion government railways, embracing the Intercolonial and the Prince Edward Island railways, have a mileage of 1732 miles, which have cost $103,400,000. The mileage has increased by 377 since 1897. In the fiscal year ending June 30, 1912, the gross earnings were ten and one-half per cent on the cost of the system, while the net were sixteen one-hundredths of one per cent. The system has never paid the interest on the investment. The line was built as a political work, and much opposition has been shown to any attempt to place it on a commercial basis by increasing rates. The attitude of the department of Railways and Canals, under whose management it is, is not to look for interest on the investment, but simply for a balance on the right side. It has the disadvantage of having a circuitous route 248 miles longer between Montreal and St John than that of the Canadian Pacific.

By the acquisition in 1879 of the Grand Trunk line to

Rivière du Loup, the Intercolonial obtained a western terminus at Chaudière Junction. In 1897 it was felt that the traffic of the Intercolonial would be improved by obtaining an entrance into Montreal. Accordingly an arrangement was made, which was ratified in 1898, whereby the Drummond Counties Railway from Chaudière Junction to Ste Rosalie Junction was leased and running rights were obtained from the latter point into Montreal over the Grand Trunk tracks. The minister of railways, A. G. Blair, favoured a further extension of the railway to Georgian Bay with a view to participating in western traffic. This project was favoured by the Winnipeg Board of Trade, which desired a further extension to Winnipeg. However, changes in political conditions and the Grand Trunk Pacific agreement prevented this project being carried through.

The constant demands for further capital expenditure on the Intercolonial have caused discussions in parliament as to the advisability of disposing of it entirely. In 1897 Thomas D. Craig, a conservative member, bluntly stated that the government ought to go out of railway business entirely and cease attempting to compete with the Canadian Pacific and the Grand Trunk on unequal terms. In 1901 there were suggestions that the road should be placed under the management of the Canadian Pacific. This and subsequent suggestions that it should form the eastern outlet of the Canadian Northern aroused bitter opposition in the Maritime Provinces.

The Maritime Provinces have held that if it is justifiable to have toll-free canals for through traffic, it is justifiable to continue the present condition of the Intercolonial. The sentiment of these provinces has been not only to maintain the system as a government work, but also to increase its mileage. The attitude of Nova Scotia has been shown in the discussion on the subsidy legislation of 1882. In 1896 Sir Charles Tupper stated that he was in favour of all the privately owned lines in Nova Scotia being incorporated with the Intercolonial. From time to time New Brunswick has favoured the acquisition by the Intercolonial of specific branch lines. The matter of further incorporation of branch lines is now engaging the attention of the Dominion govern-

ment. In 1911 the minister of Railways moved a resolution favouring the leasing by the Intercolonial of twelve lines in Quebec and New Brunswick which embraced a mileage of 539 miles.

There has been a constant ebb and flow of opinion on the relative merits of government and of private ownership. In the construction of the Intercolonial there was not in the first instance any general consideration of policy. The liberals, who at first favoured private ownership, were forced to carry on the Canadian Pacific as a government work. Sir John A. Macdonald, in defending the policy of private ownership and management of the Canadian Pacific, said it was impossible for the government to conduct the Intercolonial properly because of the constant political pressure to which it was subjected. In 1899 Sir Charles Tupper said: 'It is absolutely impossible in the nature of things that a government railway can be managed in Canada by the government of the day with the same economy and success and the same regard for the interests of the people as the same railway could be managed by a private corporation.' This represents the older attitude of the conservative party, although individual members have dissented from it.

In the liberal party the Hon. A. G. Blair expressed in 1902 a belief in a government transcontinental railway which should be operated so as to cover running expenses only, and thus act as a regulator of the rates of other railways. But the general opinion of the liberal party has been that of Sir Wilfrid Laurier, who holds strongly to the advantage of private initiative when efficient regulation is superimposed on it. Although R. L. Borden in his Halifax platform in 1904 came out strongly in favour of government ownership, he at the same time recognized that the ratification of the Grand Trunk Pacific agreement would for years make government ownership a mere speculative abstraction.

Government Aid

In 1897 an amendment in the subsidy legislation was adopted by the Dominion, whereby when the railway cost

more than $15,000 per mile a grant of $6400 per mile might be made. There has been a growing feeling that some return should be obtained by the government for the assistance granted. In the original legislation of 1882 provision was made for reserving running rights over the subsidized roads. In 1899 the subsidy legislation contained a provision that the rates were to be under the absolute control of the governor in council. In the same year the Dominion adopted the policy of requiring from subsidized roads services in respect to the transportation of men, material and mails which would equal three per cent per annum on the amount of the subsidy. This policy was continued in the act of 1912 under which the Canadian Northern Pacific, which operates in British Columbia under a provincial charter, was subsidized.

In 1894 the Dominion gave up the policy of making land grants. The experience with the Canadian Pacific and the difficulties in connection with the taxation of the lands of this company had shown that the alienation of large blocks of land placed an obstacle in the way of that rapid settlement which the Dominion desires. Although the provinces are also realizing this they have not yet ceased making land grants. The following table shows how large an area has thus been alienated :

By the Dominion	32,864,074 acres
,, ,, Province of Quebec . .	13,625,949 ,,
,, ,, ,, ,, British Columbia	8,119,221 ,,
,, ,, ,, ,, New Brunswick .	1,647,772 ,,
,, ,, ,, ,, Nova Scotia .	160,000 ,,
,, ,, ,, ,, Ontario . .	635,039 ,,
Total . .	56,052,055 acres

The cash assistance given to railways by bonuses, loans, and stock subscriptions by the Dominion, the provinces and the municipalities is as follows :

Dominion	$154,075,235
Provinces	35,945,515
Municipalities	18,051,323
Total . .	$208,072,073

The newer development of the subsidy policy since 1903 has been concerned with guarantees of interest on bonds. In this the Dominion and the provinces have followed the same course, as will be seen from the following statement:

Dominion	$91,983,553	guarantees
Manitoba	20,899,660	,,
Alberta	55,489,000	,,
Saskatchewan	32,500,000	,,
Ontario	7,860,000	,,
British Columbia	38,946,832	,,
New Brunswick	1,893,000	,,
Quebec	476,000	,,
Nova Scotia	5,022,000	,,
Total	$245,070,045	guarantees

The bond guarantees represent a contingent liability of the government. What their worth to the railways may be is incapable of exact estimation. That the burdens which have been lightly assumed by the western provinces will always remain contingent is most fervently to be hoped. Of the 25,400 miles of railway in Canada, 22,000 have been constructed since Confederation. The cash contributions by the Dominion, the provinces and the municipalities represent a contribution of $8898 per mile of the privately owned railways, or thirteen per cent on their total capitalization. As much of the stock in the smaller subsidized roads had a purely nominal value, and as there has been 'discount financing' at times on the other roads, it is safe to estimate the government cash assistance as representing twenty-five per cent of the money actually going into construction. In the case of the land grants it is safe to say that on an extremely conservative estimate these will recoup the railways for seventeen per cent of their present nominal capitalization.

Railway Rates

In the earlier days of Canadian railway legislation, railway extension, and not the possible burden of excessive or inequitable rates, claimed the public attention. It is true that provisions for maxima, automatic regulation of rates

by means of curtailments of the dividends, as well as provisions for state purchase, were contained in the legislation. But these proceeded rather from imitation of American legislation or the directions of the Colonial Office than from belief in their necessity. When thought was directed to the question, there was a reliance on the pervasive effect of competition.

While complaints were made, as early as 1860, that the Grand Trunk, in the transportation of American freight, was charging rates which discriminated against the Canadian shipper, the subject of railway rates elicited but little general discussion until 1873. In that year hard times led representatives of the agricultural constituencies to complain of excessive charges. In 1873 a bill was introduced to provide for equal mileage rates. It was in the period of 1880-85 that the necessity of railway regulation was forced on the attention of parliament by D'Alton McCarthy, to whom is due the honour of being the prime mover for effective railway regulation. The consolidations and amalgamations which were taking place in this period were shocking people out of their complacent optimism as to the regulative effects of competition. McCarthy favoured legislation based on the English legislation of 1873, which established the Railway Commission.

The Board of Railway Commissioners

As a result of McCarthy's advocacy a Royal Commission was appointed in 1886 to investigate the needed changes in the Railway Act. This commission recommended that the Railway Committee of the Privy Council should receive wider power in regard to rates, it being considered that the adoption of the commission form of regulation had not yet justified itself. While the Railway Committee exercised, subsequent to 1888, a much more efficient control than it is credited with, the fact that its political composition gave it a shifting personnel, and the further fact that it was not migratory, minimized its usefulness.

The desire for more effective regulation still continued, and

began to excite active discussion in parliament in the years 1896-97. During the period 1898 to 1901, special investigations on the subject were made for the department of Railways and Canals by the writer. In consequence of these investigations and the report thereon, legislation was drafted which became effective in 1904. In drafting this legislation Canada profited by the experience of England as well as of the United States. Wide regulative powers, not only over rates, but also over matters affecting public safety and convenience, were given. The scope of jurisdiction has from time to time been extended, until to-day no other regulative tribunal in the world dealing with the regulation of privately owned railways has such extensive jurisdiction.

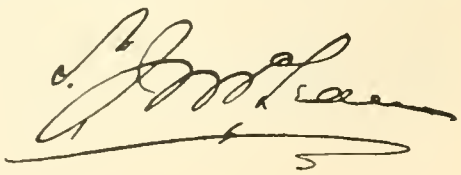
The commission, more exactly known as the Board of Railway Commissioners for Canada, has endeavoured to simplify its procedure so that legal formalities may be reduced to a minimum. By holding sessions in all parts of Canada, from the Atlantic seaboard to the Yukon, it has endeavoured to give a quick, convenient and economical method of redress. It has been peculiarly fortunate in the strong men it has had as chairmen between 1904 and 1912. Its first chairman, the Hon. A. G. Blair, brought to the commission a wealth of experience in administrative law which he had obtained as minister of Railways and Canals. The second, the Hon. A. C. Killam, has left an undying imprint on the commission's work and policy by his ability as a jurist. Its third chairman, the Hon. J. P. Mabee, was a man of distinguished administrative ability, whose clear common sense looked into the heart of complicated matters. The hand of death has removed all three; the influence of their work goes on.

It has been the fortune of the commission to have an ever widening area of jurisdiction. Important as its corrective jurisdiction has been, its preventive functions have been still more important. No complaint is too small or too informal to put the machinery of the commission in operation. For every matter settled by formal hearing five are handled through correspondence or on reports of the commission's officials. Many a matter which, if left to the ordinary routine of dilatory letter writing on the part of some sub-

ordinate official of a railway, would have become a rankling grievance may thus be settled in its earlier stages.

It would be out of place to attempt any formal appraisal of the commission's work or technical presentation of its scope and function. Significantly marking their appreciation of the public obligations of public service corporations, and the duty of the state to regulate trade, Ontario, Quebec, Manitoba and New Brunswick have appointed Public Utility Commissions. A Grain Board to deal with the complicated and technical matter of North-Western grain shipments was appointed by the Dominion government in 1912. This appreciation of the distinction between legislative enactment and administration has fortunately come earlier in Canada's industrial development than it has done in other countries. Canada has lavishly contributed to transportation enterprises. Her regulative policy is not an attempt to take away with the left hand what she gives with the right, but an attempt to ensure even-handed justice.

The development of electric traction, which began in 1892, has not yet obtained its true place in the transportation system. There are now (1912) in existence 1587 miles of electric railway, two-thirds of which has come into existence since 1901. While the greater part of this mileage is contained in cities and is concerned with the transportation of passengers, there is a steady increase in inter-urban systems, such as exist in the Province of Ontario around Toronto and west of Hamilton, which engage in the carriage of freight. A similar development is to be found in British Columbia. While the provincial governments have contested the right of the Dominion to charter purely intra-provincial electric railways, thirty per cent of the mileage is under Dominion charters. The general principle adopted in granting a Dominion charter has been to charter those lines doing freight as well as passenger business.



SHIPPING AND CANALS

SHIPPING AND CANALS

I

SHIPBUILDING AND SHIPPING UNDER THE FRENCH RÉGIME

THE outstanding feature of Canadian water transportation is the St Lawrence system—a chain of navigable lakes and rivers extending a distance of 2340 miles into the very heart of the continent.[1] In the earlier years of the country's history it was a controlling factor in settlement. Over it the immigrant travelled to his new home ; by means of it the necessaries of his simple life were brought to him, and it enabled him to send the products of his toil to the markets of the world. From the time of the French fur trader, with his flotilla of birch-bark canoes loaded with furs from the interior, to the present day of the whale-back deep-laden with grain from the prairies, it has been the avenue of civilization and the main artery of commerce.

Not that the country lacked other means of approach. The western coast of the continent was washed by the Pacific Ocean, across which reposed the ancient civilization of the Orient. On the north-east there was Hudson Bay, used by the great company to transport its articles of barter and its cargoes of furs. On the east, looking towards Europe, was the broad Atlantic seaboard, indented with numerous bays and inlets. None of these, however, had the advantages possessed by the St Lawrence route. The Pacific coast was long destined to remain an almost unknown land, for Asia took no interest in America ; and Hudson Bay, on account of

[1] This is the distance in statute miles from the north or outer end of the Strait of Belle Isle to Duluth, at the head of Lake Superior.

the ice in Hudson Strait, was a closed sea for all but the summer months. The whole Atlantic coast, it is true, was exposed to the restless colonizing energy of Europe, but neither the valuable fisheries of the North Atlantic nor the fretted coast-line of Acadia, with its splendid harbours, could hold the ships of the Old World back from the rich country tributary to the St Lawrence. The shores of Acadia were less productive and far more at the mercy of the enemy's ships. From both a commercial and a military point of view the St Lawrence route had advantages that made it, from the dawn of Canadian history, the accepted highway for communication with Europe.

For many years after Jacques Cartier first sailed up the St Lawrence to Hochelaga (Montreal) in 1535, Canada had little intercourse with Europe. The connection with France was kept up by the hardy fishermen of St Malo, Brest and Rochefort, who came flocking annually to the banks of Newfoundland and the Gulf of St Lawrence to fish. Occasionally, too, an adventurous mariner sailed up the river to trade in furs with the Indians. But, with these exceptions, the amount of shipping between Canada and France in this early period was almost negligible.

The period of neglect ended with the founding of Quebec by Champlain in 1608. From that time till the conquest of the country by the English in 1760 France took an active interest in Canada, endeavouring to extend the trade in furs, to christianize the Indians and to promote immigration. Thus the adventurous explorers and fur traders of this period, together with the zealous missionaries, were the pioneers of inland navigation.

The fur trade extended even west of Lake Superior, and the route it took to reach the St Lawrence was by the Ottawa. The way was broken by numerous falls and rapids, and it was only the light birch-bark canoe, which could be carried past these obstructions, that made through communication possible. The furs from the Far West and North were transported over the chains of small lakes west of Lake Superior to Rainy Lake, between which and Lake Superior was the 'Grand Portage.' Once on Lake Superior, there was an

unobstructed route to Sault Ste Marie. There, however, another portage had to be made, around the rapids of the St Mary River, to reach Lake Huron. Thence, skirting the north shore of Lake Huron and Georgian Bay, the fur trader directed his fleet of canoes to the mouth of the French River, which he ascended to Lake Nipissing. From that lake he proceeded, partly by land and partly by water, to the headwaters of the Ottawa, down which, with frequent portages, he paddled to its confluence with the St Lawrence. When he reached Montreal, or Three Rivers, or Quebec, he transferred his peltry to the ships that were to carry them to France.

This journey was one of arduous toil. Some idea of the hardships encountered may be had from the narrative of Galinée,[1] a priest, who in 1669, with a fellow-missionary, Dollier de Casson, made the trip from Montreal to Sault Ste Marie through the Great Lakes, returning by way of the Ottawa. On the latter river, Galinée tells us, there were no less than thirty portages. 'From the Ottawa,' he continues, 'one passes, half by land and half by water, a distance of twenty-five or thirty leagues to get to the lake of the Nipissings, from which one descends to the French River, where there are four or five more waterfalls, to the lake of the Hurons.' The trip from Sault Ste Marie took twenty-two days, and they were 'twenty-two days of the most fatiguing travel that I have ever experienced in my life.'

Had it not been for the Indian birch-bark canoe the navigation of these waterways would have been impossible. As this was the first craft that navigated the inland waterways of Canada, its construction is of particular interest. It was a frail, light boat made by covering a wooden framework with thin sheets of bark. The canoes used by the Algonquins, says Galinée, were constructed of birch bark and lasted for five or six years. Those used by the Iroquois, however, were made of elm and could stand the buffetings of the rivers little more than a month. They were about twenty feet long and two feet wide, and could be carried with ease by one man. A canoe of such dimensions was capable of carrying four men

[1] See 'The Pathfinders of the Great Lakes' in section 1.

and eight or nine hundred pounds of baggage. 'Some there are which carry ten or twelve men with their outfit, but it requires two or three men to carry them.' The canoes used in war or trade were much larger than those used by the early explorers, being from thirty to thirty-five feet in length and from five to six feet in width. Including the weight of the crew, they could carry a load of from four to five tons.

In later times, the increased volume of goods to be carried demanded larger and more seaworthy craft, and led to the construction of bateaux and Mackinac boats. The bateau was a light, flat-bottomed boat usually made of cedar. It had high bows and sloping sides, and the length was great in proportion to the width. It was propelled by means of oars and poles. The Mackinac boat was a sort of flat-bottomed barge with square bows. It could carry a heavy load, but was so unwieldy that it had to be towed by hand or poled along the rivers and lakes. The French, however, were not content with these small craft alone, and soon made use of the forests about them to build larger boats for the St Lawrence, for the Great Lakes, and even for ocean traffic.

The distinction of building the first ships in Canada is claimed for Pont-Gravé. Left behind at Port Royal by De Monts, who had gone to France for provisions, he and his companions began to despair of the return of their associate. To avoid the contingency of being stranded in a strange land, they built, in 1606, two small vessels in which they intended to set sail for Canso or Ile Royale, where they would have a better chance of falling in with ships returning to France. Pont-Gravé also has to his credit the building, at Tadoussac, of another small vessel, in which he arrived at Quebec in 1608, just in time to aid in frustrating a mutinous attempt on Champlain's life.

The importance to the colony of finding wood suitable for the construction of ships was fully realized by the governing officials of New France. Jean Talon, the first intendant, soon after his arrival in 1665 dispatched exploring parties to various parts in order to ascertain the supply of timber that could be used in shipbuilding. In 1742 we find Hocquart,

who held the office of intendant, announcing, with no small degree of satisfaction, that one Pierre Baron had discovered a fine tract of red pine thirty leagues above Montreal, and that he (Hocquart) had journeyed thither to select masts for a ship then building. There was timber in abundance, and it could be obtained at a cost of from twenty to twenty-two sols per cubic foot, whereas fifty sols per cubic foot was paid in France for timber from Lorraine.

Until the establishment of Royal Government in 1663, the building of ships was undertaken more from necessity than for commercial reasons. Although the Sovereign Council, in 1663, built the brigantine *Galiote*, the first vessel launched at Quebec, it remained for Talon to give shipbuilding in New France the status of an industry. Talon was, above all things, a business man. He did things with a minimum of fuss and trumpet-blowing, but his achievements have stamped him as the ablest administrator New France ever had. With nothing theatrical in his deportment, he compares favourably with the impetuous Frontenac or the ambitious La Salle. In his own quiet but persistent and far-seeing way he accomplished much, and not one of the least of his achievements was the establishment of a shipbuilding industry.

Soon after his arrival in 1665 his business eye discerned the advantages the country had for shipbuilding, and he wrote to Colbert that there was in Canada an abundance of wood suitable for the construction of vessels. Colbert was highly pleased with this information, and the king sent out two or three carpenters to report on the wood available for the purpose. These gave a favourable report ; but Talon did not wait for Colbert to take the initiative. He undertook himself the construction of a vessel of 120 tons in order that the colonists might profit by the example. The vessel was paid for out of his own private funds and placed at the disposal of the king. The object-lesson was not without effect, for, in 1667, as Talon informs us, a similar vessel was built by a private individual for use in the fisheries of the lower St Lawrence. At the same time, he states that he is trying to induce this same person, together with two or three others,

to build a ship of 300 or 400 tons burden for the West Indian trade.

Not content with building vessels for local use, he began constructing ships for the king. In the '*budget extraordinaire*' of 1671, the sum of 40,000 livres was set aside to build these vessels and to load them with materials to be transported to France for building ships there.

Many of the vessels built at Quebec were of large size for that period. In 1672 there was on the stocks a ship of from 400 to 500 tons burden, and preparations were under way for one of 800 tons—no mean achievement when it is considered that, at that time, the majority of the ships in the French merchant marine ranged from 10 to 30 tons. Seven years later there was only one French-built ship exceeding 400 tons. Talon applied to the solution of the shipbuilding problem the same careful, persistent energy with which he solved other problems of administration, and his efforts were successful. Before he left Canada he was able to write that 350 men were employed in this one industry, and this in a colony of less than 7000 souls.

But Talon was not the only one engaged in this work in New France at this time. La Salle added to his fame as an explorer the distinction of building the first vessel to sail the upper lakes. Possessed with the idea of discovering a new route to the Orient, he concentrated all his energies upon the accomplishment of that end. In return for rebuilding Fort Frontenac of stone, he had been granted the right to trade in furs with the Indians of the west country, and this privilege, he hoped, would enable him to pay off some of the heavy debts he had contracted and to secure funds for further exploration. He conceived it necessary, both for the fur trade and for his explorations, to have a vessel on the upper lakes. Accordingly, in the autumn of 1678, he dispatched an advance party of his men to the mouth of the Chippawa, or Welland, River, where they erected a hut, felled timber, and made ready to build a ship in the spring. La Salle himself, fitting up a rude 10-ton barge with supplies and rigging for the new vessel, set out from Fort Frontenac to join them, and, after being wrecked near

Queenston, reached their camp early in 1679 and, at the mouth of Cayuga Creek, laid the keel of *Le Griffon*, the first ship to spread her canvas to the breezes of the upper lakes.

Le Griffon was a vessel of some sixty tons burden,[1] fitted with two masts and a jib, and, under the conditions prevailing, no little difficulty was experienced in building her. The tools of the builders were of a rude sort, the timber was green, and the rigours of a severe winter had to be endured, as well as the ill-will of the surrounding Senecas; for, although La Salle had taken care to get the consent of the Indians to the building of the 'big canoe,' they had looked upon the undertaking with increasing suspicion as the work proceeded, and had even tried to set fire to the partially completed ship. Early in May 1679 everything was in readiness for the launching, even to the elaborately carved figures for the prow and stern, and the ship slid into the waters of the Niagara River to the booming of her cannon and the shouts of the workmen. After being launched *Le Griffon* was towed up the Niagara River to within three miles of Lake Erie, and from there, on August 7, set sail for the upper lakes. Proceeding through Lakes Erie, St Clair and Huron, she arrived at Green Bay in Lake Michigan, where a cargo of furs was taken aboard. Remaining to pursue his work of exploration, La Salle dispatched his vessel to Niagara, never to set eyes on her again. She was wrecked on the return voyage, and not a soul survived to tell how she perished.

Pretentious as this initial attempt may have been, shipbuilding did not flourish on the Great Lakes, and for many years only an occasional vessel was built to satisfy pressing needs. At Quebec, on the other hand, many vessels were constructed for the king and for the West Indian and coasting trades. In 1731 the French king offered a bounty of 500 livres on each ship of 200 tons or over built in the colony, and in 1732 the total amount set aside for this purpose was 3000 livres. Just before the outbreak of the War of the Austrian Succession, the industry experienced a decided

[1] Father Hennepin, *A New Discovery of a Large Country*. The same authority in his *Louisiane* says it was of 45 tons.

revival on account of the building of a number of vessels for the French navy.

The shipyard established by Talon on the St Charles became too small to accommodate the number of vessels being built, and in 1743 it was considerably extended. So great were the demands upon the facilities, due to the building of the king's ships, that it was thought the construction of vessels for private individuals would be prejudiced. When, in 1743, some French merchants engaged in the West Indian trade proposed to build five or six vessels for this service, and also from twenty-five to thirty boats yearly for use in the West Indies, the scarcity of carpenters made it doubtful if the work could be done without interfering with the building of the king's ships. As the naval vessels increased in size, the yards on the St Charles became unsuitable on account of the shallowness of the water in the river. A new shipyard was therefore established in 1745 at the Cul-de-Sac. Just previous to this a dry dock had been built opposite the St Charles shipyard.

The first of the series of vessels built for the king at Quebec at this time was the transport and store ship *Le Canada*. In her construction Hocquart experimented with several kinds of timber, including white oak, grey oak, pine, spruce and elm, all of which proved satisfactory except the pine. In the later ships white oak was mostly used. *Le Canada* was launched in 1742, and was employed mainly in the trade between Canada, the West Indies and France. The cost of this vessel was 217,707 livres. Several frigates and warships, ranging from 22 to 72 guns, were built. After *Le Canada* came *Le Caribou*, constructed entirely of white oak. She had a crew of 150 men, and cost 313,712 livres to build and equip. *Le Castor* was 115 feet long, 31 feet beam and carried 26 guns. *Le St Laurent* and *L'Orignal* each carried 60 guns, while the frigate *L'Algonkin*, launched in 1753, surpassed either of them with an armament of 72 guns. Two frigates of 24 and 30 guns respectively were built after *L'Algonkin*.

Unfortunately, the ships built for the king did not meet early expectations, and towards the close of the French

régime the building of them was discontinued. The president of the Navy Board, writing to the intendant, Bigot, in 1752, stated that the poor quality of the timber used, and the high cost of construction, had blighted early hopes. One naturally questions whether the peculations of the corrupt intendant did not have something to do with increasing the cost of construction and robbing the colony of this industry. However that may be, the king definitely announced in 1755 that the building of large ships in the colony for the navy would be discontinued, saying that the timber in *Le Caribou* and *Le St Laurent* had been found defective, and that at Brest no very high opinion was held of *L'Algonkin*. He, however, encouraged the building of merchant ships by private persons as in 1731. Shipbuilding in Canada had, therefore, to wait for its full development till the country came under its new rulers after the Conquest.

The shipping interests of New France were not large. Furs, timber, fish and grain were the chief commodities exported, and these were sent almost entirely to France, the French West Indies and Ile Royale. The colonial system, which at that period bulked so large in the policy of European nations, did not permit any manufacturing in the colony, and all manufactures were consequently imported from the mother country. Payès de Montauban, writing about 1749, says that before the War of the Austrian Succession Canada imported from France merchandise valued at from five million to six million livres.[1] From thirty to forty vessels from different parts of France, ranging from 120 to 400 tons burden, were engaged in carrying this merchandise. Most of these ships, on discharging their cargoes, loaded with Canadian commodities for the West Indies, and after unloading these took on board molasses, sugar, rum and other tropical products for France. Those not going by way of the West Indies returned direct to France with cargoes of lumber, furs, fish and grain.

[1] Memorial by M. Payès (or Pagès) de Montauban on the state of Canada during the last years of peace (Canadian Archives, F 90). This document is not dated, but bears internal evidence of having been written after 1748.

In addition to the vessels thus engaged in the trade with the mother country, about twenty vessels of various sizes visited Quebec yearly from St Dominica and Martinique. These all made Louisbourg a port of call. Had it not been for the trade with these islands the shipping of New France would have been of much less importance than it was. The traffic had been started by Talon in 1668 in a vessel he had had built, and by 1673 two or three vessels made the voyage every year. To encourage the trade the king had. upon the solicitation of Talon, agreed to some remission of the duties on sugar imported into France in the ships of the colony. In 1681 Jacques Duchesneau, the intendant, stated that in one year (1675) since his arrival four ships were engaged in the trade. In the succeeding seventy-five years the number of vessels had thus increased five times. Besides this, New France supplied from fifteen to twenty vessels, which did the coasting trade of Ile Royale and the French West Indies.

A brisk trade was carried on with Ile Royale. After Acadia had been ceded to England in 1713 by the Treaty of Utrecht, the French began the construction of extensive fortifications at Louisbourg. The island, possessing as it did a rocky soil, grew no grain, and the food supply for the large number of workmen engaged on the fortifications was therefore obtained from New France. Large supplies of flour, meat, beeves, sheep, poultry, eggs and cheese were imported from Quebec for these workmen, and subsequently for the garrison stationed there.

Notwithstanding this activity, the coastwise and oversea shipping was not large, considering the length of time the French had been in Canada. This was due mainly to the method of administering the affairs of the colony. The detailed paternalism of the mercantile system, regulating production and trade and even interfering with personal liberty, strangled the initiative of the individual and restrained the expansion of commerce and shipping. The bolder and more resourceful spirits protested against these restraints by becoming *coureurs de bois* and living the life of the fur trader and the Indian. Added to these drawbacks were the bloody Indian wars and the vindictive struggles

with the British colonies to the south. All this tended to retard the economic development of the colony, and, when Great Britain came into possession in 1760, she had before her no easy task in developing the resources of the country and extending its trade and shipping.

II

SHIPPING ON THE GREAT LAKES, 1760-1812

FOR three decades after the capitulation of Montreal, events conspired to retard the work of nation-building in Canada. To begin with, commerce and shipping were paralysed by the war, the country was flooded with a worthless paper money, and the corrupt practices of the intendant Bigot and his followers had ruined internal commerce and killed all incentive to industry. The development of the country bordering on the upper lakes was hindered by Pontiac's War,[1] and but a few years of respite intervened between the Indian's ill-timed project and the struggle with the American revolutionists. This latter involved the invasion of Canada by a land force and the crippling of Canadian shipping on the high seas by French and American privateers. The effect on the shipping of the country is shown in the statistics of vessel clearances from Quebec: in 1774 the number of vessels taking out clearance papers was 151 with a tonnage of 14,998; while in 1780, when the full effects of the war were being felt, only 46 vessels, representing a tonnage of 6290, left the port.

Nevertheless, the Revolution did not fail to bring its blessings. It fastened attention upon the frontiers along the Great Lakes, and a naval armament was improvised to guard those waters. Prior to the war, there had been little shipping of any kind on the Lakes. There was the *Gladwyn*, an 80-ton schooner built in 1763, that plied on Lakes Michigan and Huron, and also her contemporary, the *Beaver*, which was the first sailing vessel to appear on Lake Erie after La Salle's famous *Le Griffon*. In 1764 the *Victory*, the *Royal Charlotte*

[1] See 'Pontiac's War' in section II.

and the *Boston* were launched on the lower lakes, and in 1767 the *Brunswick*, commanded by Captain Alexander Grant, appeared. Sterling and Porteous built the *Enterprise* at Detroit in 1769, but she was destined to run only one season before being wrecked. One of the first vessels of this period on Lake Ontario was the *Charity*, of 70 tons, constructed at the mouth of the Niagara River. Other vessels soon to make their appearance on the Lakes were the *Chippewa*, *Lady Charlotte*, *Beaver 2nd*, *Angelica*, *Nancy*, *Swan*, *Sagima*, *Detroit*, *Arabasca*, *Speedwell* and *Industry*. All, however, were of small tonnage.

On the outbreak of the Revolutionary War, merchant vessels were impressed into the king's service, and shipyards were established at Detroit, Niagara, and Carleton Island near Kingston, to build armed ships for patrolling the Lakes. Strict precautions were taken to prevent the revolutionists securing any ships to form an opposing naval force. In 1776 circulars were sent out to all the officers commanding at the upper ports,[1] instructing them to let no ships pass without proper passports, and to allow no vessels larger than a common boat to be built, except for the king's service. A year later, to make assurance double sure, Governor Carleton gave orders that no vessels were to navigate the Lakes except such as were armed and manned by the crown.

At first sight it would seem that the effect of such an order would be to bring Lake commerce to a standstill. To prevent it working any hardships to the merchants and traders, the king's ships were allowed to carry freight whenever they could conveniently do so. This practice was continued for a number of years, and was of considerable convenience to trade. As late as 1806, regulations were issued governing the transport of freight in vessels of the provincial service. The rates charged were one-tenth less than those exacted by merchant vessels. The proceeds, after the deduction of twenty per cent as fees for the naval officers, went to form a fund for disabled mariners.[2] Then as now there were people

[1] Michilimackinac, Niagara and Oswegatchie.

[2] Regulations for the transport of merchant goods or other private effects in the government yacht *Toronto*, July 1, 1806 (Unclassified Shipping Papers, Canadian Archives).

who thought the government a fair mark for deception, and many merchants could not be induced to pay the freight bills they owed the government. So far did the abuse go that an order was issued in 1783 forbidding the transport in government vessels of the goods of all those merchants in arrears for service.

The regulation requiring all goods to be carried in government vessels was kept in force for a number of years after the close of the Revolutionary War, and caused bitter complaints from the traders. In 1783 the merchants trading to the upper country complained to Governor Haldimand of the great quantity of goods, destined for Niagara, waiting over from the previous year at Carleton Island. Four years later this question was the subject of a memorial to Lord Sydney by the London merchants trading to Quebec. They said that the Indian trade, which was by far the most considerable, was greatly impeded through a lack of proper vessels, and urged that traders be allowed to build vessels for themselves. The excuse given by the government for the continuance of the regulation was that such a measure was necessary to keep the fur trade from falling into the hands of the Americans.

In 1782 the whole naval establishment on the Great Lakes, together with that at St Johns on Lake Champlain, employed 739 men, including those on board ship and in the dockyards. In the naval force on Lake Champlain there were the *Thunderer*, of 422 tons ; the *Royal George*, of 384 tons ; the *Inflexible*, of 204 tons ; and the *Maria*, *Carleton*, *Washington*, *Liberty*, *Lee*, *Royal Convert*, *Jersey* and *Commissary*, all under 130 tons.[1]

The vessels on Lake Ontario included the *Limnade*, 80 feet in length and of 226 tons burden ; the *Haldimand*, of 150 tons burden and carrying 16 guns ; the *Seneca*, of 130 tons and 18 guns ; and the *Caldwell* and the *Mohawk*. On this lake, in 1780, the most disastrous early marine tragedy of the Great Lakes occurred. In that year the *Ontario*, a vessel of 22 guns, commanded by Captain Andrews, foundered between Niagara and Oswego in a terrible storm, and a

[1] Reports giving the name and tonnage of each armed vessel on the Lakes are to be found in Canadian Archives, B 145.

hundred and seventy-two people, including a detachment of the Eighth King's Own, were lost.

The armament on Lakes Erie and Huron included the *Ottawa*, of 200 tons and 12 guns; the *Gage*, 114 tons and 12 guns; the *Dunmore*, 70 tons and 10 guns; the *Rebecca*, 136 tons; and a number of smaller craft—the *Felicity*, *Faith*, *Adventure*, *Wyandotte*, *Welcome* and *Archangel*.

The unique feature of the late eighteenth-century Great Lake shipping is the combination of the naval and the mercantile marine—a circumstance brought about by the exigencies of war and the needs of a young and undeveloped country. The service performed by the government vessels may be judged from the fact that from 1777 to 1779 their freight earnings amounted to £13,000 York currency.[1] During the season of navigation in 1793, twenty-six vessels cleared from Kingston. Eleven voyages could be made in a season on Lake Ontario between Kingston and Queenston, and on Lake Erie, between Fort Erie and Detroit, six, or, at the outside, seven.

The most important result of the Revolutionary War, so far as Canada was concerned, was the influx of the United Empire Loyalists, who, failing to get fair treatment at the hands of the victorious revolutionists, left their homes in the Thirteen Colonies and emigrated to Great Britain and Canada. They were a hardy class of settlers, well accustomed to the life of the pioneer, and were a valuable acquisition for Canada. The exodus began in 1774, but the largest numbers came to Canada in 1783 and the five or six years following. That portion of Nova Scotia later known as New Brunswick was founded by them. All told, it is estimated that from 28,000 to 40,000 loyalists settled in Nova Scotia. Of those who went to Lower Canada by way of Lake Champlain, many later ascended the St Lawrence to Upper Canada. Most of those locating in the upper province came by way of Niagara or Oswego. From the latter place they travelled in boats or schooners to Queenston.

The majority of the loyalists were in poor circumstances, their property having been confiscated by the revolutionists.

[1] About £9750 sterling.

The British government had, therefore, to contribute to their support until they were able to provide for themselves. The forwarding of supplies by water for these newcomers was consequently responsible for some activity on the lower lakes. Soon, however, they became self-supporting, and Lake shipping gradually increased as the fruits of their labour were added to the furs of the North and West.

These were the days of the bateau, and it was in this sort of boat that the loyalists ascending the St Lawrence travelled. The bateau and, later, the Durham boat were indispensable because of the rapids. Bateaux were sharp at both ends, wall-sided and flat-bottomed except for a slight inclination upward in the bottom at each end. They had generally a crew of five men, four to row and one to steer, and were equipped with square sails, oars, and long poles for setting them through the rapids. The earlier type of bateau carried about three tons of merchandise or thirty-five barrels of flour. Subsequently, however, these vessels were built much larger, their carrying capacity being from four to four and a half tons.

Goods from Montreal destined for Upper Canada were carted to Lachine, where the first rapids occurred, and were there loaded into bateaux for the river voyage to Kingston.[1] It was the usual thing for a number of bateaux to leave Lachine in company in order that the crews might combine in helping to pull each boat up the rapids. When a rapid was reached, the bateaux were lightened and a portion of the goods carted to a landing above. One or two men remained in each bateau to keep it away from the river bank, while the others went ashore to tow it up the swift current by means of a rope fastened to the bow. A barrel of rum was the standard of weight for merchandise. The price of carrying it from Lachine to Kingston ranged from $3 to $3.50, and the cost of transporting other goods was regulated by this scale.

The bateau continued to be practically the sole means of transport between Montreal and Kingston till about 1809.

[1] An excellent account of transportation on the St Lawrence in the last decade of the eighteenth century is given in a statement by Robert C. Wilkins, a loyalist who came to Upper Canada in 1792 (Canadian Archives, M 180).

At that time the Durham boat was introduced by American traders from the Mohawk valley. This was a long, shallow, nearly flat-bottomed boat propelled by means of poles, and because of its larger size it materially lessened the use of the bateau in the carrying trade. The trip to Kingston was made in from six to eight days, and on the return voyage the boats, loaded with furs, potash and other produce of the country, reached Lachine again in about three days. Durham boats and bateaux continued to be used till, by the construction of canals, the St Lawrence was made navigable for larger craft.

At Kingston goods were either transferred to schooners or borne westward by the river boats, which passed up the Bay of Quinte to the famous 'Carrying Place' located on the narrow peninsula separating the bay from the upper portion of the lake. Here the boats were unloaded, hauled across the land in wagons to Wellers Bay, and reloaded to proceed to York or Queenston. After the selection of York as the capital of Upper Canada, regular bateau communication was maintained between it and Kingston.

Schooners, however, soon displaced bateaux on Lake Ontario. Loading from the river craft at Kingston, they conveyed their cargoes to York or to the landing-place at Queenston, where, in order to pass the falls of Niagara, a portage had to be made to Chippawa. A traveller writing in 1797 says that, at times, as many as sixty wagons were employed carting goods from Queenston to Chippawa. On Lake Erie, schooners similar to those on Lake Ontario received the freight and carried it to its destination on the upper lakes.

The bleak shores of Lake Superior provided little merchandise for early Lake commerce, except furs. Before 1812 there were only a few small sailing craft on the lake. In that year the sloop *Fur Trader*, of 40 tons, was built. There was little traffic for her, and her owners took the risk of running her down the St Mary rapids to Lake Huron, but she was wrecked in the attempt. Most of the other vessels on the lake shot the rapids into Lake Huron with better success.

The shipping on Lake Erie was trifling till the War of 1812, after which the full tide of American immigration set

in for the north-western states. Besides the vessels previously mentioned, there were the sloop *Otter* of 75 tons, the *Good Intent*, the *Harlequin* and the *Erie Packet*. The first American-built vessel to appear on the lake was the schooner *Washington*, built at Erie, Pa., in 1797. After sailing for a year on Lake Erie she was carried on wheels to Lake Ontario, where, under the name of *Lady Washington*, she plied between Queenston and Kingston under the British flag.

Prior to the War of 1812 there was much more shipping on Lake Ontario than on Lake Erie. A brisk trade was carried on between Kingston, York, Queenston, and the ports on the American shore. There was a number of fast-sailing vessels on the lake and some good records were made. One of the best was held by the sloop *Sophia*, which, in 1795, made the trip from Kingston to Niagara in eighteen hours.

Among the first merchant vessels on Lake Ontario was the *York*, built at the mouth of the Niagara River in 1792 by Francis Crooks, a brother of the Hon. James Crooks. The *York* was wrecked in 1799 at the mouth of the Genesee River. Other early vessels were the *Lady Dorchester* of 87 tons, and the *Simcoe* owned by a number of Montreal and Kingston merchants. Although of only 137 tons burden, the latter had the distinction of being larger than the law allowed ; for the provincial assembly in 1788 had ordained that no vessel on Lake Ontario should be of greater burden than 90 tons.

The schooner *Prince Edward*, built by Captain Murney in the township of Marysburg in 1800, was a popular vessel on the lake before the war. She was constructed of red cedar and was of goodly size, being capable of having 700 barrels of flour stowed beneath her hatches. In 1812 she was still in good condition and was armed by the government for use in the war.

Shipyards were established at Kingston by the government, and a number of vessels was built for the provincial service. One of the first of these was the *Speedy*, a schooner with a tragic record. On October 7, 1804, she left York for Presqu' Ile under the command of Captain Paxton, and was lost in a gale. About twenty people were drowned, including

Cochrane, one of the puisne judges of the Court of the King's Bench, and Gray, the solicitor-general of the province, who were going to attend the assizes of the district of Newcastle. Other vessels built by the government at Kingston were the *Mohawk*, the *Mississaga* and the *Duke of Kent*. Nearly all these were constructed of green timber, and consequently lasted only six or eight years at most. The *Mississaga*, for instance, was badly decayed at the end of three years.

On the eve of the War of 1812, and during its progress, the shores of Lake Ontario and Lake Erie were bustling with activity in shipbuilding. There was a dearth of armed vessels, and both sides strained every nerve to make up the deficiency, converting trees into ships in record time. Kingston, Sackett's Harbour, Fort Erie, Amherstburg and other towns turned out a good many of these hastily constructed craft.

The naval encounters on Lakes Ontario and Erie had an important bearing on the outcome of the war. Even the most casual reader of Canadian history is familiar with the exploits of Yeo and Chauncey on Lake Ontario and the naval attacks on Oswego, Sackett's Harbour, York and Fort George. On Lake Erie one of the most momentous battles of the war was fought off Put-in-Bay between the Canadians under Commodore Barclay and the Americans commanded by Commodore Perry.[1] The Canadians were defeated and, as a result, had to evacuate Detroit and abandon the territory of Michigan that had been captured by Brock. In this battle of Lake Erie, as it is called, Barclay's squadron consisted of the *Detroit*, *Queen Charlotte*, *Lady Prevost*, *Hunter*, *Chippewa* and *Little Bell*, carrying a total of 63 guns with a broadside fire of 459 pounds. Perry had nine vessels armed with 54 guns, but these were of heavier calibre, being capable of throwing a broadside of 936 pounds. After the war some of these vessels were refitted for the merchant service.

[1] See 'Canada in the War of 1812' in section II.

III

THE BEGINNINGS OF INLAND STEAM NAVIGATION

LAKE shipping was badly crippled by the War of 1812. Even before actual hostilities commenced, two Canadian schooners, the *Lord Nelson* and the *Niagara*, were captured in American waters and condemned as prizes under the Embargo Act, a measure passed by the United States Congress to prevent British vessels trading with American ports. During the war the merchant vessels of neither side were safe from capture by the armed vessels of the other, but on the conclusion of peace there was a speedy revival of commerce. The loyalists who had settled in Upper Canada before the war were making their presence felt, and production increased rapidly. This gave an impetus to shipping; for there were no railways then, and all the products of the country had to go to market by water. For a few years after the close of the war sailing vessels held undisputed possession of Lake commerce, but, as we shall see, they gradually gave way to steamboats.

Lake Ontario had the lustiest shipping of all the lakes. A common route for schooners was from Prescott on the River St Lawrence to Kingston, and thence to York and Queenston at the head of the lake. A number of vessels were also engaged in the traffic of the North Shore ports, while a thriving carrying trade was done between York and Queenston, and between Kingston and Sackett's Harbour. Schooners were the most popular craft. Among the well-known vessels of this class then in use were: the *Dove* and the *Reindeer*, plying between York and Niagara; the *Mary Ann*, commanded by Captain J. Mosier, between Kingston and York; and the *May Flower*, between Niagara and Kingston. Between Kingston and Sackett's Harbour there was a fast-sailing schooner called the *Kingston Packet*, commanded by Captain James Chapman. Another schooner on the same route was the *Perseverance*, commanded by Captain J. G.

Parker, of Kingston. Other sailing vessels of the *post-bellum* period were the *Pert, Dolphin, Henrietta, Netley, Wood, Duck, Jane, Britannia, Red Rover* and the *Willing Maid.*

There were also a number of armed British sailing vessels on the Great Lakes. On Lake Ontario there were stationed the *Kingston*, the *Commodore*, the *Sir Robert Hall*, the *Burlington*, the *Charwell* and the *Montresor.* The *Champlain* patrolled Lake Champlain, while on Lake Erie the *Confiance* looked after British interests.

On the Lower St Lawrence

But the time was at hand when sailing vessels were no longer to have undisputed possession of Canadian waters: the steamboat was to oust them from their supremacy. The first Canadian steamboat was the *Accommodation*, which made her initial trip on the St Lawrence River between Montreal and Quebec on November 3, 1809, two years after Fulton had demonstrated the use of steam in navigation on the Hudson. She was built by the Hon. John Molson in conjunction with David Bruce, a shipbuilder, and John Jackson, an engineer, and was launched broadside on, at the back of the old Molson brewery in Montreal. She was 72 feet in length of keel and 85 feet over all, with 16 feet width of beam. The engine was of 6 horse-power and her average speed about five miles an hour. On her first trip she took three days in all to reach Quebec, but her actual running time was only thirty-six hours. As the river was neither lighted nor buoyed, and the pilots were not as expert as they are now, it was considered necessary to anchor at night. The return trip to Montreal took four days. Although she was fitted up to accommodate twenty passengers, she carried but ten on her initial trip. The fare from Montreal to Quebec was eight dollars, while that from Quebec to Montreal was ten dollars, meals and berth included. The sight of a steamboat was a decided novelty then, and she aroused much curiosity, both along the route and after her arrival at Quebec, where there was a constant stream of people to visit her.

The venture, however, was not strikingly successful.

The main defect of the boat was the weakness of her engine. When she reached the swift St Mary's current oxen had to be used to tow her up the stream. Molson, however, was by no means daunted. He was a far-seeing business man and recognized the possibilities of steam navigation. He went to England and there ordered from Boulton and Watt of Birmingham a stronger engine designed for a larger vessel. The new steamboat, fittingly called the *Swiftsure*, was launched in 1811. She was 120 feet long, 24 feet beam, and her engines were rated at 28 horse-power—about five times as powerful as that of the *Accommodation*. Handsomely fitted up, she was in all respects a much superior boat to her predecessor.

Before 1818 the St Lawrence Steamboat Co., or the Molson Line, as it was popularly known, added to its fleet the *Malsham*, the *Car of Commerce*, the *Lady Sherbrooke*, and, later, the *Waterloo*, the *John Molson* and the *John Bull*. The *Lady Sherbrooke* was 170 feet long and 34 feet beam, and was equipped with a 63-horse-power side-lever engine. The *Waterloo* foundered in Lake St Peter and the *John Bull* was burned in 1838. The latter vessel was repeatedly used as the official residence of the governor-general, the Earl of Durham.

The first serious opposition to the Molson Line came from John Torrance and Co. of Montreal, who, in 1826, bought the steamboat *Hercules*, of 100 horse-power, and ran her between Quebec and Montreal as a towboat and passenger steamer. She was followed by the *St George* and the *British American*, and in 1837 the *Canada* was placed on the route. The *Canada* was 240 feet long, and was credited with being the largest and fastest steamer in North America.

Steam navigation on the St Lawrence made very rapid strides in the third decade of the nineteenth century. Up to 1818 many travellers still jolted over the rough roads from Montreal to Quebec in the uncomfortable two-wheeled *calèche*, but after that date the steamboats with their comfortable quarters monopolized the through traffic.

In 1823 a number of Montreal men formed a joint stock company to build steam towboats for towing ships up the river from Quebec to Montreal. The first boat built for

this purpose was the *Hercules*, which towed the ship *Margaret* of Liverpool from Quebec to Montreal—the first ship to ascend the river in that way. Previous to this ships had to wait for favourable winds in order to reach Montreal, and were often delayed for weeks.

On Lake Ontario

All the steamboats mentioned were intended for use on the river. Before 1817 no vessel propelled by steam had ploughed the waters of the Great Lakes ; but in that year, on June 5, the first Canadian steamboat on Lake Ontario, the *Frontenac*, made her maiden trip from Kingston to York. She was built by a company composed of citizens of Kingston, Niagara, Queenston, York and Prescott. Soon after the formation of the company tenders were advertised for, and Bruce of Montreal, who had been associated with Molson in the building of the *Accommodation*, and Henry Teabout of Sackett's Harbour, who had been employed in the American shipyards there during the war, submitted estimates. By a very close vote the contract was awarded to the latter. After a survey of the shore Teabout selected a spot at Finkles Point, Ernesttown, eighteen miles from Kingston, as the most suitable for constructing the boat, and it was there that the *Frontenac* was built.

Work on the *Frontenac* was commenced in the autumn of 1815, and she was launched on September 7 following, in a shower of rain that spoiled the pleasure of a crowd of people who had assembled to witness the event. The length of her keel was 150 feet and of her deck 170 feet. She was of about 700 tons, and drew about 8 feet of water. The circumference of her paddle wheels was 40 feet. Her engines were of some 50 horse-power and were made by Boulton and Watt. The total cost of the vessel was about £27,000, including £7000 for her engines. Schooner rigged and painted black, she was similar in appearance to an ocean liner. 'Her proportions strike the eye very agreeably,' says a contemporary newspaper account, 'and good judges have pronounced this to be the best piece of naval architecture of the kind

yet produced in America.' Indeed, for many years, the *Frontenac* was the largest and finest steamboat on Lake Ontario. She plied weekly between York and Prescott under the command of Captain James McKenzie, until she was burnt in 1827 at Niagara, by incendiaries who set her on fire and then cut her adrift. She was towed back to the wharf by the steamer *Niagara*, but before the flames could be extinguished she was badly damaged, and shortly afterwards she was broken up.

While the *Frontenac* was building, a steamboat called the *Ontario*, intended for the route between Ogdensburg and Lewiston, was under construction at Sackett's Harbour. The *Ontario* made her first trip in April 1817, thus establishing by a narrow margin the right to her claim of being the first steamboat to navigate Lake Ontario. She was 110 feet long, 24 feet wide, of about 240 tons, and had engines of 21 horse-power. She proved a failure, the heavy swells of the lake lifting her paddle-wheel shaft out of its bearings and wrecking her machinery. This defect was remedied, and she continued on her route till 1832, although her speed was no better than five miles an hour and she took ten days to make the round trip between Lewiston and Ogdensburg.

The second Canadian steamboat was the *Queen Charlotte*, built in 1818 at the same place as the *Frontenac*, and largely from the material left over from the building of the latter vessel. Her engines were made by the Ward Brothers of Montreal. She was of much smaller size than the *Frontenac*, and was placed on the route from the head of the Bay of Quinte to Prescott. She was looked upon as a godsend by the inhabitants along the bay, for she was so accommodating as to stop almost anywhere to oblige passengers. Shortly after she began her trips the stage between Prescott and Kingston was discontinued. Not long after the *Queen Charlotte* came the *Dalhousie*, a steamboat of 350 tons, built at Prescott. Her route was between that place and Kingston.

In 1826 there were nine steamboats running on Lake Ontario and the upper St Lawrence. Besides the *Frontenac* and the *Queen Charlotte* there were: the *Queenston* and the *Niagara*, running between Prescott and the head of the lake;

the *Toronto*, the *Dalhousie* and the *Caroline*, between Prescott and Kingston ; and the *Canada* and the *Martha Ogden*, the latter an American vessel, between York and Queenston. The *Toronto* was built of overlapping half-inch planks and was the same shape at both bow and stern. She ran from Prescott to Kingston and, later, to Toronto, but was not a success. The *Queenston* was built at Niagara by the Hon. Robert Hamilton in 1825. She was of 350 tons burden and was commanded by Captain Whitney. The *Canada* made her first trip from Toronto to Niagara in 1826, going out of the harbour, as the *Loyalist* says, 'in fine style.' She was built by Joseph Dennis and her engines were constructed by the Wards of Montreal. She made the trip to Niagara in a little over four hours.

The *Niagara* had a curious history. She was originally a sailing vessel named the *Union*, commanded by Captain Mosier. Owing to some fault in her construction she suddenly capsized in the St Lawrence. After a good deal of difficulty Mosier righted her, took her to the Kingston dockyard, cut her in two and added thirty feet to her length. He placed powerful engines in her, and she made the return trip from Prescott to Toronto, with calls at the intermediate ports, in less than four days. The *Niagara* was wrecked at Poplar Point not far from Kingston.

After the burning of the *Frontenac*, her owner, the Hon. Robert Hamilton, together with Andrew Heron, built the famous *Alciope*, which plied under this name till 1831, when she was renamed the *United Kingdom* and her low-pressure engines replaced by high-pressure ones. At this time also Captain Isaac Harrington took over the command of the vessel. As the *Alciope* she had been commanded by Captain James McKenzie, who had sailed the old *Frontenac* during the whole of her career.

Captain McKenzie was looked upon as the father of steam navigation in Upper Canada. Like most of the early Lake captains, he was a royal navy man who had been sent out from England to serve on the Lakes in the War of 1812. When the war ended he went back to England, where he made a thorough study of the steam engine. In 1816, however, he

returned to Canada and soon after took command of the *Frontenac*. His advice was usually sought on all steamboat ventures. At the time of his death in 1832 he was building two steamboats, one on Lake Simcoe and one at the head of Lake Ontario.

The number of steamboats on Lake Ontario and the St Lawrence increased rapidly after 1830. Prominent among the steamers of this time was the *Sir James Kempt*, a well-known craft plying between Prescott and Belleville. She was built at Bath by Henry Gildersleeve, and was capable of a speed of twelve miles an hour. In the same year the famous *Great Britain* was built by the Hon. John Hamilton for service from Kingston to the head of the lake. She was of 700 tons burden, and at that time was the largest steamboat on the lake. She was very popular with the immigrants. In the next few years there appeared: the stern paddle-wheel steamer, *John By*, of 100 tons, plying between Toronto and Hamilton; the *William IV*, a 450-ton boat, conspicuous by her four funnels, running between Prescott and Toronto; and the *Commodore Barry*, built by Henry Gildersleeve for service between Prescott and the head of the lake. In 1833 three steamboats, the *Cobourg*, the *Kingston* and the *Belleville*, named after the places where they were built, appeared on the lake. The largest of these, the *Cobourg*, of 500 tons burden, was exceeded in size only by the *Great Britain*. She was commanded by Captain Zealand, and did important work during the Rebellion of 1837. A very popular boat was the *St George*, of 400 tons, built at Kingston in 1834. Other steamboats were: the *Traveller*, a staunch and speedy little boat built on the Clyde, brought to Canada in sections, and put together in Montreal; the *Thomas M'Kay*, running between Quebec and Bytown (now Ottawa); the *Sir Robert Peel*, a long, narrow, fast vessel of light draught; and the *Queen Victoria* and the *Experiment*. On Lake Simcoe were the *Peter Robinson* and, after 1840, the *Simcoe*; while the *F. B. Head* did service on the Trent waterway.

In 1840 a line consisting of three steamboats, the *Gore*, the *Burlington* and the *Britannia*, ran between Rochester, the North Shore ports, and Toronto. The *Gore*, under the

command of Captain Thomas Dick, who in 1845 took her through the Welland Canal to Lake Huron, had the distinction of being the first steam merchant vessel to navigate Georgian Bay. The reason for the late introduction of steam on the upper lakes was the little traffic offered. The first merchant brig on these waters, the *Union*, built in 1814, though of only 93 tons burden, is said to have gone out of commission from lack of goods to carry.

On the Ottawa and the Rideau

The navigation of the Ottawa River was impeded by the rapids between Carillon and Grenville. Consequently, previous to 1832, when the canals overcoming these obstructions to navigation were completed, a double service was necessary between the St Lawrence River and Bytown. The first steamer on the upper reach—that is, between Grenville and Bytown—was the *Union*, which was built in 1819 and put on the route in 1820. She took twenty-four hours to cover the distance of sixty miles. Seven years later the *William King* began to ply on the lower reach. She was followed by the *St Andrew*, and in 1828 by the *Shannon*, a large and powerful steamer built at Hawkesbury.

After the completion of the Ottawa and Rideau canals there was heavy traffic over this waterway between Kingston and Montreal. About this time the Ottawa and Rideau Forwarding Company was formed to engage in the trade. The forwarding business over this route soon became a very valuable one, and was carried on by a number of companies and individuals. Foremost among these were Macpherson, Crane and Co., who at one time ran a line of thirteen ' puffers,' or high-pressure steamers, and a large number of barges and bateaux between Kingston and Montreal. This company owned a private lock overcoming the dangerous navigation at the mouth of the Ottawa River, and thus had a monopoly of the towing business till 1841. In that year, however, Captain R. W. Shepherd in the steamer *St David* took a dangerous risk and discovered a safe channel through the rapids at Ste Anne, thereby breaking up the monopoly.

On Lake Erie

The *Walk-in-the-Water*, named from the ejaculation of an Indian when he saw Fulton's *Clermont* navigating the Hudson River, was the first steamboat on Lake Erie. She was an American vessel, launched at Black Rock on May 28, 1818, and plied regularly between Buffalo and Detroit, touching at the intermediate ports on the south shore. Her commander was Captain Job Fish. She had a tall smokestack set at such an angle as to give her a very rakish appearance. As the steam whistle was not introduced on the Lakes till 1845, she carried on her forward deck a four-pounder cannon which was fired to give warning of her approach or departure. The fare from Buffalo to Detroit was eighteen dollars cabin and seven dollars steerage. The *Walk-in-the-Water* was 135 feet long, 32 feet wide and of 8½ feet depth of hull. Her engines were of the vertical type, having a 36-inch cylinder and a 4-feet stroke, and were capable of propelling her at an average speed of seven and a half miles an hour. They were exceedingly well built and were in use on the Lakes for twenty successive years. The *Walk-in-the-Water* was wrecked in a gale in 1821. Her engines were saved, however, and put in the *Superior*, a new steamboat, of about the same tonnage, built at Buffalo and launched in 1822. In 1824 the *Henry Clay*, a sister ship, was launched, and not long afterwards the *Pioneer*, the first boat on the lake with high-pressure engines, was built at Black Rock.

Canadian steamboat navigation on Lake Erie began with the *Chippewa* and the *Emerald*, which ran between Chippawa and Buffalo. The former, a vessel of 100 tons burden, was put in service in 1825 shortly after the opening of the Erie Canal. Other early Canadian steam vessels on Lake Erie were the *Kent*, Robert Hamilton's *Clinton*, and the *Ploughboy*.

After 1825 the merchant marine of the upper lakes increased rapidly until it equalled and finally surpassed that of Lake Ontario. This was due mainly to two causes. The first was the tide of American immigration which, impelled by the spirit of land speculation, poured westward over Lakes

Erie, Huron and Michigan to people the Western States. As a result of the increased traffic, there appeared on these lakes a number of magnificent steamers handsomely fitted out and each capable of carrying upwards of a thousand passengers. The second cause of the increased shipping was the movement of grain eastward, which in later years assumed such immense proportions. This traffic began in 1836 when the brig *John Keane* brought a cargo of grain—some 3000 bushels of wheat—from Lake Michigan to Buffalo. By 1840 a regular movement of grain from the west to the east had been established. At first the terminal facilities were of a rude sort and greatly retarded the clearing of vessels, but the invention of the grain elevator, the first of which was erected at Buffalo in 1843, soon made it possible to handle expeditiously enormous quantities of grain. On account of the diversion of traffic through the Erie and Oswego Canals the grain trade did not increase the shipping over the St Lawrence as much as might have been expected.

IV

THE CANALS OF CANADA

GREAT as were the advantages afforded the country by the St Lawrence system of lakes and rivers, they were not to be fully realized without the expenditure of large sums of money for improving the natural waterway. At intervals along the route swift rapids or tumbling cataracts impeded the further progress of the inland navigator. Up these no craft could ascend, and but few sailors were willing to risk the descent of any but the less precipitous rapids. At most of them resort had to be had to the laborious task of portaging. Even with the birch-bark canoe carrying the minimum of baggage and supplies, this was a trying task for men of the strongest physique. When the settlement of the upper country added to the water-borne traffic and necessitated the use of larger craft, it became imperative that canals should be constructed if the country were not to be retarded in its development.

Up the St Lawrence as far as Lake St Peter there was a channel navigable by the largest ocean vessels, but in portions of that lake only from ten and a half to eleven feet of water was available during the low-water season. This was sufficient for the small vessels used for many years, but, towards the middle of the last century, dredging had to be done to enable ocean vessels to reach Montreal. Some eight miles above Montreal were the celebrated Sault St Louis or Lachine Rapids. These were impassable for boats, and consequently one of the first public works of any considerable magnitude undertaken after the British occupation was the building of a canal past them. A few miles beyond Lachine came three rapids—the Cascades, the Cedars and the Coteau—in quick succession. Next, some thirty odd miles farther up, were the well-known Long Sault Rapids. Then came rapids of a less formidable character: at Farran's Point, Rapide Plat, Pointe aux Iroquois, Point Cardinal and the Galops. The growing trade between the upper and the lower province made it necessary that canals should be built to overcome all these unnavigable stretches.

Proceeding westward across Lake Ontario and through the Niagara River, the next obstacle to navigation is encountered, and the most formidable of them all—the Falls of Niagara. To avoid these a canal about twenty-seven miles in length is necessary. From there to the entrance to Lake Superior no impediments to navigation occur, except a few shoals in Lake St Clair. But in the St Mary River, as if guarding the entrance to the greatest of the Great Lakes, are the St Mary Falls and Rapids. Here is the last of the obstructions to navigation in the St Lawrence system, and here, too, was built the last canal necessary to open navigation to the head of the system at the west end of Lake Superior.

Under the French Régime

The French had done almost nothing towards the improvement of navigation during their occupation of Canada. There was little reason why they should construct canals. The country south and west of Montreal was a wilderness,

little known, and the fur trade that found its outlet through the Ottawa River was hardly of sufficient proportions to warrant any large expenditure on the construction of canals about the Island of Montreal. When the straitened financial condition of the French treasury during the latter portion of the French régime is considered, it is not to be wondered at that no serious attempt was made to improve navigation.

That the rulers of New France did not do so was not for lack of urging and example. The Sulpicians had begun the improvement of the Little St Pierre River on the Island of Montreal from its mouth to Lake St Pierre, and the construction of a canal thence to a point above the worst part of the Lachine Rapids. Dollier de Casson, the superior of the Sulpicians, let the contract for the excavation, at this point, of a canal about a mile in length, twelve feet wide at the surface of the ground, and having a depth of eighteen inches at the period of lowest water in the St Lawrence. Work was begun in the autumn of 1700, but the contract was never completed. The contractor became bankrupt in the following year, not, however, before he had excavated the amount required, with the exception of a cut three or four feet deep for a distance a little less than half a mile. The surplus revenues of the Sulpicians were never sufficient to complete the canal, but the French authorities hoped some day to be able to finish it. Louis XIV ordered plans and estimates of the work to be made in 1708, but the money to carry them out was not forthcoming. In 1714 Michel Bégon, the intendant, urged upon the king the necessity of finishing the work so that the marble from a quarry discovered near the Long Sault could be made available for use above the rapids, but it was said that the cost would be too great. Chaussegros, a French civil engineer, in 1717 reported that only about one-quarter of the whole canal remained to be finished, but the question of completing it was again deferred till 1733, when the same engineer submitted new plans involving a canal with locks costing 255,000 livres. But the 'no funds' complaint had become chronic, and the project was not carried through to completion.

Under British Rule

The work of canalizing the St Lawrence was therefore left for the British. Under the new régime two interests insisted upon the work—the military and the commercial. From the time of the Conquest to the outbreak of the War of 1812 the government of Canada always considered itself under the necessity of making preparation for a possible war with the United States. The frontiers of Upper Canada were most exposed to attack, and to provide for their defence it was necessary to have free and unimpeded navigation from Lower Canada to the seat of danger. The St Lawrence canals thus became one of the chief objects of concern to the British governors in Canada, and, up to the second decade of the nineteenth century, the imperial government either built, or made substantial contributions towards the construction of, canals that would be useful for military as well as for commercial purposes.

The inhabitants of the two provinces were fully alive to the importance of canals to the commercial development of the country, and from time to time investigations were made into the feasibility and cost of improving the water communication. In 1818 the governments of Upper and Lower Canada appointed a joint commission to report on the advisability of building canals on the St Lawrence above Montreal; other commissions were appointed later, the most important being one in 1821 by the government of Upper Canada and one in 1833 by the government of Lower Canada. When the Union was being effected, it was patent to all that the encouragement of trade between the two Canadas by providing a navigable waterway between them for lake-going vessels would avail more towards the solidification of the interests of the two provinces than would any act of parliament. Lieutenant-Colonel George Phillpotts, of the Royal Engineers, was directed by Lord Durham to report on the canal navigation of the two provinces in 1839.[1] He submitted two reports, one in 1839 and the other in 1840, recommending

[1] Phillpotts had the rank of captain in the Royal Engineers.

the enlargement of all the canals between Lake Erie and tide-water, and proposing as the standard-sized lock that which had been used in the then partially completed Cornwall Canal, viz. one 200 feet in length, 55 feet in width and with 9 feet of water on the sills. Although all the recommendations made by Phillpotts were not acted upon, the building of canals after the Union was proceeded with vigorously.

As the united provinces had endeavoured to improve the means of water communication, so did the confederated provinces in 1867 concentrate attention upon the improvement of the inland waterways. By 1867 commercial motives had almost entirely displaced military motives as incentives to the building and the enlargement of canals. The tremendous growth of Lake traffic and the increase in the size of steamers made some action towards the improvement of Canadian canals imperative. As a preliminary to commencing this work the government in 1870 appointed a canal commission, which submitted a report in 1871 advising a uniform enlargement of the navigable waters from Lake Erie to tide-water with the use of canal locks 270 feet long, 45 feet wide, and with 12 feet depth of water on the sills. Plans for the enlargement of existing works on this basis were approved in 1873, and the work was begun. In 1874, however, after an organized movement among the leading business men concerned with inland navigation, strong representations were made to the government to increase the depth of the canals to 14 feet instead of to 12 as recommended by the commission. This request was granted in 1875, and orders were given to have the permanent parts of those works that had not then been placed under contract constructed on the enlarged scale.

The St Lawrence Canals

The canals on the St Lawrence already built by the British were mainly for military purposes. They were four in number and were designed to overcome the rapids at the Cascades that were later surmounted by the Beauharnois Canal. Work was begun on them in 1779 by Captain Twiss of the Royal

Engineers, who was acting under orders from Governor Haldimand. Cornish miners were brought from England to do the rock-cutting. The first canal, situated at the Faucille Rapids, a short distance above Cascades Point, was 400 feet long and 6 feet wide, and was equipped with one lock. The second, of the same width, was at the Trou du Moulin near the mill owned by the Baron de Longueuil. It consisted of a cut some 200 feet long, unprovided with locks. At Split Rock Rapid advantage was taken of a natural opening through the rocky shore, known as the Split Rock. This passage was 200 feet long and was equipped with one lock, the sides of which were formed by the natural walls of the channel. The last and most important cutting was at Coteau du Lac. It had three locks and was 900 feet long by 7 feet in width. This series of canals was thus about 1700 feet in length, with five stone locks, each six feet wide, with the exception of those at Coteau du Lac, which were seven feet. The locks had a depth of two and a half feet on the mitre sills, and were designed for bateaux or small boats carrying from thirty to forty barrels of flour. The toll charged was twenty-five shillings for each bateau, except for those of the king, which passed free. The total number of craft making use of them at the time of their completion was about 260 a year.

The operation of these canals did not prove as successful as was anticipated, the two lower ones being damaged by ice each spring. In 1800 Colonel Gother Mann of the Royal Engineers was authorized to make a report regarding them, and he recommended that the depth of all should be increased a foot and a half. Owing to the liability of damage by ice to the canals at the Cascades and the Mill Rapid and the resultant heavy expense of maintenance, he advised that one new canal should be built to avoid both rapids. He proposed the enlargement of the gates at the Coteau du Lac and at Split Rock to 9 feet 6 inches and the giving of an additional breadth of 2 feet to the canals and 4 feet to the locks. He recommended that the new canal should be 1500 feet long and should be provided with three locks each 20 feet wide and 120 feet long, sufficient to accommodate six boats at a

time. The expense, he estimated, would be partially offset by about £600 annually received from tolls, which in 1799 had been more than double what they had been in 1795. The new canal was completed in 1805, the old one being used during its construction to prevent interruption to navigation.

The Lachine Canal

What the Sulpicians had long hoped for, and what the French king had put off till the day should come when France would have a full exchequer, was fated never to be accomplished during the French régime. The building of the Lachine Canal was left for British energy and British enterprise. The increase of trade with the upper province after its settlement by the United Empire Loyalists made the building of a canal at the Lachine Rapids one of pressing concern.

Adam Lymburner, a Quebec merchant, urged the building of the canal in 1791, pointing out that the cost of carting Upper Canadian goods past the rapids would ' fall very heavy on the rude produce of the lands.' It was not, however, till the War of 1812 had impressed upon the government the necessity of having unimpeded communication with the Upper Canadian frontier that serious steps were taken to carry out the project. In 1815 the legislature of Lower Canada passed an act appropriating £25,000 for the purpose and entrusting the execution of the work to commissioners appointed by the government. Captain Samuel Romilly, of the Royal Engineers, made a report upon the project in 1817, and estimated that a canal with a depth of 3 feet of water and capable of passing Durham boats 60 feet long, 13 feet 6 inches wide and drawing 2 feet 6 inches of water, would cost slightly over £46,000 Halifax currency.[1] However, no steps were taken to carry out the provisions of the act, and on January 18, 1819, a petition signed by a large number of the leading men of the province, asking that they be incorporated for the purpose of building the canal, was presented to the government. The government acceded to

[1] At that date about £36,800 sterling.

their request. A company known as 'The Company of the Proprietors of the Lachine Canal' was created with a capital of £150,000 divided into shares of £50 each. The British government, recognizing the value of the canal from a military point of view, subscribed for six hundred shares, while the government of the province subscribed for two hundred. The canal was to be completed in three years and was to be navigable for vessels drawing at least five feet of water. It was to be not less than 40 feet wide at the surface of the water and 28 feet at the bottom, while the locks were to be 100 feet long by 22 feet wide. Tolls were fixed ranging from 12s. 6d. for vessels under five tons burden up to 30s. for vessels of over sixty tons burden, and in addition 5s. was to be paid for each ton of merchandise carried. If the tolls were considered excessive, the legislature at the expiration of two years could reduce them to such an extent as to limit the earnings of the company to not more than fifteen per cent on the capital outlay. Provision was also made that the king could take possession of the canal at any time, either before or after completion.

But the prospects of the canal did not seem any brighter than they had been under government direction. The company secured Thomas Burnett, an engineer from England, to make a survey and estimate the cost, and expended in all £2058 in preliminary work. On January 8, 1821, the company presented a petition to the government stating that only 1780 of the original 3000 shares of capital stock had been subscribed. It asked that the government should make certain amendments to the act of incorporation, extend the three-year time limit set for the completion of the canal, and take an additional number of shares in the enterprise. The government replied by repealing the act of incorporation, buying out the company for the sum it had expended in development work, and itself undertaking once again the building of the canal. Commissioners were appointed in 1821, with John Richardson as chairman, to superintend the work, and construction was rushed with a gang of nearly four hundred men.

As originally projected the canal was to run from Lachine to the foot of the current of St Mary, but the exorbitant

prices asked for land on this section of the route led to the terminus being placed two miles and a half farther up, where the current was swifter. The canal as built was about 8½ miles long, with 28 feet breadth at bottom and 48 feet at water surface through earth. Where it passed through rock it was made 36 feet wide at the water surface. It was provided with seven locks of cut stone, each 100 feet long, 20 feet wide and with 5 feet depth of water. The canal was opened in August 1824, but vessels did not pass through till 1825, the shipping companies having previously contracted for the cartage of their goods over the portage for the year 1824.

The expense of construction, amounting to £109,601, was borne by the government of Lower Canada, with the exception of £10,000, contributed by the British government on condition that government vessels and military stores should be allowed to pass free of toll.

An agitation for the enlargement of the canal, begun just prior to the union of the two provinces in 1841, led to the appointment of Lieutenant-Colonel Phillpotts to report on the canal navigation of the country. Phillpotts recommended that a new cutting should be made for the Lachine Canal. This should be commenced at Leishman's Point about half a mile higher up the river than the one then in use and should be continued for the greater part of the route. The sizes of the locks were to be the same as those recommended for the whole Canadian canal system.[1] According to his plan, however, the number of locks would be reduced from seven to six. The estimated cost of the improved canal was £324,600. Immediately after the Union the engineers of the Board of Works made an estimate of the cost of improvements on all the canals that were necessary for the accommodation of Lake-going vessels, and, disregarding Phillpott's recommendations, advised the retention of the old route for the Lachine Canal.

Work on the enlargement was begun in 1843 and the improved canal was opened in 1848. The number of locks was decreased to five, each 200 feet long, 45 feet wide and

[1] See p. 506.

with 9 feet of water on the sills, except the first two, which, on the urgent representations of the merchants of Montreal, were deepened to 16 feet so as to allow the largest sea-going vessels to enter the first basin of the canal.

As a result of the findings of the canal commission reporting in 1871 the canal was again enlarged. It was first built with locks giving a depth of 12 feet of water, although the permanent structures were designed for 14 feet. The present canal has five locks 275 feet long, and two of them have a depth of 18 feet of water on the sills, while the remaining three have 14 feet depth of water. It was not until 1901 that the canal was opened for the use of vessels having a 14-foot draught. Its locks are electrically operated and it is also lighted by electricity. The old canal, with locks giving a depth of 9 feet of water, parallels the new one and is still available for use.

The Beauharnois and Soulanges Canals

After leaving the Lachine Canal and sailing in a southwest direction across Lake St Louis we pass a series of three rapids—the Cascades, the Cedars and the Coteau—before Lake St Francis is reached. This swift water extends over a distance of about eleven miles, but there are only some seven miles of actual rapids, the spaces between consisting of tranquil stretches easily navigated. As previously stated, the navigation of this portion of the river was made possible by four canals built under the supervision of the Royal Engineers between 1779 and 1783, the locks at Split Rock and Coteau du Lac being replaced in 1804 by a single new canal. Later, in 1817, the breadth of these canals was doubled and their depth increased to three and a half feet in order to admit Durham boats and large-sized bateaux capable of carrying a hundred barrels of flour.

This improvement, however, did not long meet the needs of the traffic, and in 1833 the government of Lower Canada appointed commissioners to investigate the navigation of this portion of the St Lawrence River. In 1834 their engineer, John B. Mills, submitted three plans, all of which

contemplated a canal on the north shore. The one recommended by the engineer advised the building of three short canals and the utilization of the two calm navigable stretches of water between the rapids. This plan was approved by a special committee of the assembly, which recommended that a grant of money should be made to carry it out; but no further action was taken at that time. In 1834 Alexander Stevenson submitted a plan to parliament for building a canal at less cost on the south shore. Further plans for a south shore canal were presented in the following year. The work was still unattempted in 1839, when Lieutenant-Colonel Phillpotts made his report to Lord Durham on canal navigation in Canada. While conceding that a canal on the south shore would cost less than one on the north, he considered the former undesirable from a military point of view and adhered to Mills's plan of 1834.

After much discussion the Beauharnois Canal was finally built on the south shore. The contracts were let in 1842 and the work was completed by the close of navigation in 1845. The length is 11¼ miles and there are nine locks, each 200 feet long by 45 wide with 9 feet depth of water. The upper entrance was a difficult one through a rocky channel beset with dangerous currents, and, after the steamboat *Magnet* was sunk here in 1849 by being carried past the entrance and striking on the rocks, considerable expenditures were made to improve the approach.

Although still in existence, the Beauharnois Canal is no longer used, the Soulanges Canal with fewer locks, built on the north side of the river, taking its place. The building of the new canal was decided on in 1891 and the construction was completed in 1899. Its length is 14 miles, and five locks are used instead of the nine on the Beauharnois. The depth of water available on the sills is 15 feet.

The Cornwall Canal

The next canal after the Soulanges is the Cornwall, situated at the head of Lake St Francis and constructed to avoid the tumultuous Long Sault Rapids. It follows the

north shore of the river and extends from Cornwall to Dickinson Landing. The matter of building a canal at this point was discussed in the legislature of Upper Canada in 1816, and in 1818 it was one of the subjects dealt with by the joint commission appointed by the governments of Upper and Lower Canada to report on the water communication of the upper St Lawrence. Canals not less than four feet deep, to cost $600,000, were recommended. Nothing was done, but the subject was not allowed to lapse. In 1826 the lieutenant-governor submitted a report by Samuel Clowes which outlined two plans—one for a canal with eight feet depth of water and one for a four-foot waterway.

At this juncture the town of Brockville took up the matter. The opening of the Rideau-Ottawa system of canals drew traffic away from the St Lawrence, and the commercial life of the town was threatened with extinction. In 1830 Brockville undertook a preliminary survey for a canal between Cornwall and Dickinson Landing, and, in the interests of the project, brought pressure to bear on the legislature. The result was that in 1832 a resolution was passed favouring the construction of a canal having nine feet depth of water. Commissioners were appointed in 1833 to carry on the work. Two engineers, Benjamin Wright and John B. Mills, were employed to make a report, and they submitted plans for the Cornwall and the Williamsburg Canals involving an estimated expenditure of £350,000.

Work was begun on the Cornwall Canal in 1834, but the outbreak of the Rebellion in 1837 and the financial depression caused complete cessation of work for some years. Indeed, construction was not resumed till 1842, and it was not till the year following that the canal was formally opened to navigation. It had six locks, each 200 feet long, 55 feet wide and 9 feet deep, these dimensions being the largest for any canal in Canada until after Confederation. As a result of the findings of the canal commission of 1871, it was decided to enlarge the Cornwall Canal along with the other St Lawrence canals. The enlargement, giving a fourteen-foot depth of water, however, was not completed till 1900.

The Williamsburg Canals

Five miles above the Cornwall Canal is the Farran's Point Canal, which, together with the canals at the Rapide Plat and the Galops, constitute what are known as the Williamsburg Canals. The rapids they overcome are not particularly strong and passenger steamers navigate them both ways. Although the building of these canals was proposed at various times before the union of the provinces, their construction was not begun till 1844. That at Farran's Point was completed in 1847. It was three-quarters of a mile long and had one lock 200 feet long and 45 feet wide with 9 feet depth of water on the sills. The Rapide Plat Canal was ten and a half miles farther up the river. It had two locks of the same dimensions as that at Farran's Point. Work on it was begun in 1844 and it was opened in 1847. The Galops Canal avoids the rapids at Pointe aux Iroquois, Point Cardinal and the Galops. Originally at this point there were two canals, the Iroquois and the Galops, separated by a distance of two and three-eighth miles. The Galops Canal was opened for navigation in 1846 and the Iroquois in 1847. Owing to an error of level it was found that the latter had not a sufficiency of water, and it became necessary to build the Junction Canal joining the two first built. The cost of the engineer's error was $211,231. These three canals, having a length of a little over seven miles, form what is now called the Galops Canal. They have been deepened to fourteen feet in accordance with the plan adopted in 1875, the enlargement not being completed till 1903.

Chambly Canal

The Chambly Canal, permitting water communication between Lake Champlain and the River St Lawrence at Sorel, is a ' feeder ' of the St Lawrence waterway, while the Rideau and Ottawa system is both tributary to, and supplementary of, that system. The Chambly Canal, through a country settled much earlier than that along the upper

St Lawrence, was naturally constructed earlier than the canals between Montreal and Prescott.

The first work on the Richelieu River was begun by the French in 1745 at Chambly Rapids. It consisted of removing some of the rocks to permit of the passage of masts and ship-building timber obtained from the Lake Champlain district. In 1787 Silas Deane, a native of Connecticut then residing in England, proposed to Lord Dorchester the building of a canal around the rapids at St Johns to connect Lake Champlain with the basin of Chambly. Adam Lymburner made a similar proposal in 1791, his object being to facilitate the shipment of goods from New York and Vermont to Quebec. He advocated a canal of about six miles in length having a depth of seven feet. Ira Allen in 1796 urged the construction of the canal on political grounds, intimating that the friendliness of the State of Vermont to Britain would thereby be strengthened.

The War of 1812 opened the eyes of the government of Lower Canada to the benefits the proposed canal would confer in the event of another war, and a bill was passed in 1818 authorizing a company to build it. Much money was expended by this company, but little was accomplished, and in 1823 the government passed an act making an appropriation for improving the Richelieu navigation and undertook the work itself, but commissioners to carry out the scheme were not appointed till 1829. Work was commenced at St Ours, fourteen miles above Sorel, in 1830, and, from then till the Union, was carried on in a most unsystematic way, one plan when partially carried out being abandoned for another. It remained for the Board of Works formed after the Union to complete the undertaking. The lock at St Ours was finished in 1839, and the Chambly Canal was opened in 1843, but was improved in 1850, giving a navigable depth of slightly less than seven feet of water throughout. The canal has a length of twelve miles and is provided with nine locks. Connection with the Erie Canal is made from Lake Champlain by the Champlain Canal, a waterway built in 1822, which was originally four and a half feet deep, but which was later deepened to five feet.

The construction of railways has deprived the Richelieu of its importance as an avenue of trade, and this route is now used chiefly by barges, carrying lumber from the Ottawa down the St Lawrence and through the Richelieu-Lake Champlain and Erie waterway to New York.

The Rideau-Ottawa Canal System

The Rideau-Ottawa canals make water communication possible between Kingston and the lower St Lawrence by way of the city of Ottawa. With the exception of the rapids at its mouth and at Carillon, Chute à Blondeau and Grenville, the Ottawa River is navigable as far as the Chaudière Falls at the city of Ottawa. Navigation from there to Kingston has been established by canalizing the Rideau and Cataraqui Rivers and making use of the Rideau Lakes. The distance from Kingston to Montreal by this route is 246 miles, and by the St Lawrence River only 178 miles. On this account, and also because of the large number of locks to be passed on the Rideau Canal, this route has never been able to compete successfully with the St Lawrence. The idea of a commercial waterway, however, was only incidental to that of a military water highway in the minds of the promoters of the project. As a matter of fact the works were constructed at the expense of the British government and were carried out under the direction of the Royal Engineers. Water communication with Upper Canada during the War of 1812 had been seriously interrupted by the Americans, and these canals were undertaken to prevent such an interruption in future should Canada ever again be at war with the United States.

While this statement is true of the Rideau and Ottawa Canals, it does not apply to the lock at Ste Anne, where the Ottawa empties into the St Lawrence. The end in view in constructing that lock was commercial rather than military. Although the various channels connecting Lake St Louis with the Ottawa River were not all impassable in their unimproved condition, the navigation of this stretch of water had long remained a problem for vessel owners. During the

early years of the nineteenth century the channel between the western side of Ile Perrot and the mainland was utilized, but only by means of a windlass placed on a pier near Vaudreuil a short distance above the rapids. By the use of this contrivance vessels were 'wound' up the channel to the Lake of Two Mountains. In 1816 the St Andrews Steam Forwarding Company built a wooden lock at this point, but, as they wished to secure a monopoly of the Ottawa River traffic, none but their own vessels were allowed to use it. The windlass therefore continued to be used after the completion of the lock. This monopoly was broken up, as already stated, by Captain R. W. Shepherd finding a navigable channel through these rapids. The first lock built was only capable of passing a twenty horse-power steamer; but in 1833, after it had been acquired by the Ottawa Forwarding Company, it was rebuilt of wood on the same scale as the Grenville Canal.

The dog-in-the-manger policy pursued by the owners of this private lock had become so injurious to trade that the legislature of Upper Canada made representations on the subject to the governor of Lower Canada, and, as a result, in 1840 the latter province began the construction of a lock there. After the Union the government of the united provinces took charge of it and completed it in 1843. The lock was 190 feet long by 45 feet wide with 6 feet of water on the sills at low water. In 1882 a new lock, the one now in use, was built, the dimensions of which are: length, 200 feet; breadth, 45 feet; depth of water on the sills, 9 feet.

Twenty-seven miles up the Ottawa from the Ste Anne's lock are the Carillon Rapids, which are overcome by the canal of the same name. Four miles farther on is the Chute à Blondeau, where a single lock was built to allow vessels to pass the rapid. The third and largest Ottawa canal, the Grenville, commences about a mile and a half above the old canal at the Chute à Blondeau. Captain J. F. Mann of the Royal Engineers surveyed the Ottawa in 1818 and recommended the building of these canals at an estimated cost of £16,740. All three were designed by the imperial authorities in 1819 on the scale of the Lachine Canal, but in 1828, before

their construction was completed, it was decided to increase the size in order to make them more in harmony with those on the Rideau. The depth of water in them was six feet. Unfortunately there were in the Grenville a number of small locks, and the smallest of these—$106\frac{5}{6}$ feet by $19\frac{1}{4}$ feet—determined the size of the vessels that could be used on the whole Ottawa-Rideau waterway. They have since been enlarged to 200 feet by 45 feet, and their depth has been increased to 9 feet. On account of the canals being too small to accommodate the steamboats used on the Ottawa River, transhipment of passengers from Grenville to Carillon was made by stage, but later a short railway some thirteen miles in length was built to do this work. It was purchased by the Ottawa River Navigation Company in 1859, and is operated only in summer in connection with their boats.

The Rideau Canal

Communication with Upper Canada by way of the St Lawrence had been seriously interfered with by the Americans during the War of 1812. Consequently, when peace was concluded, the imperial authorities began to look about for an alternative water communication between Lower and Upper Canada. The most obvious route was by way of the Ottawa and Rideau Rivers. Lieut.-Colonel G. Nicolls, who commanded the Royal Engineers in Canada at that time, was directed to send an officer to report on the feasibility of the route. Captain Jebb was detailed to do the work, and reported that the establishment of a water route between Kingston and Ottawa by means of the Rideau and Cataraqui Rivers was practicable. Nothing further was done till 1821, when the legislature of Upper Canada appointed commissioners to report on internal navigation. The imperial government offered a loan of £70,000 to aid in opening water communication between Kingston and Ottawa, and in 1824 the commissioners engaged Samuel Clowes to make a survey of the ground. He submitted a report giving plans for canals of three different sizes, but the legislature, being convinced that the Ottawa-Rideau route could never com-

pete commercially with the St Lawrence, decided not to act on any of these plans, and declined the proffered loan from the British government.

But the imperial authorities considered the project of too important a nature from a military point of view to be abandoned. In 1825 a committee composed of members of the Royal Engineers was sent to Canada to report on the public works of the colony and submit an estimate for the cost of the Rideau Canal. They estimated that it could be built for the ridiculously low sum of £169,000, and upon this estimate the imperial government determined to undertake the work. The size of the locks was to be 108 feet by 20 feet with 5 feet depth of water on the sills. Lieutenant-Colonel John By, of the Royal Engineers, who had previously been in Canada, was appointed to superintend the construction, and work was begun in September 1826.

Colonel By made a thorough examination of the proposed route, and in the autumn of 1827 estimated that the canal would cost £474,000, instead of £169,000. This startled the imperial authorities, and a commission was appointed at once to examine the estimates and plans, while By was commanded to suspend operations. But By had done his work thoroughly: the commission could find little fault with his estimates, but charily suggested that a saving in expense might be effected by lessening the thickness of the side walls, and by using wood instead of stone for the thirty-six locks on which construction had not been commenced—a doubtful economy.

Colonel By had strongly recommended that the size of the locks should be increased from 108 feet by 20 feet to 150 feet by 50 feet in order to admit of steamboat navigation. Sir James Carmichael Smyth, the administrator of Lower Canada, who was studiously blind to all but military considerations, was strongly opposed to this. A committee appointed for the purpose of deciding the question effected a compromise, recommending that the locks should be capable of passing a steamboat 108 feet long and 30 feet wide over the paddle boxes. Locks were therefore built 134 feet long by 33 feet wide. The canal was opened for naviga-

tion in 1832, the first steamer to pass through being the *Pumper*.

The Perth branch of the Rideau Canal extends a distance of seven miles from Lake Rideau to the town of Perth. It was built in 1834 by a private corporation to which the government had loaned money for the work and originally afforded a four-foot navigation. It was subsequently taken over by the government and has been deepened to five and a half feet.

The importance of the Rideau-Ottawa route from a commercial point of view has steadily declined with every enlargement of the St Lawrence canals. Large quantities of logs and lumber pass down the Ottawa River every year for shipment to the Old World or to the North-Eastern United States via the Richelieu River and Lake Champlain. The traffic on the Rideau Canal is, however, very small, and the destruction of the forests on the adjoining land causes an insufficient supply of water in summer, which seriously interferes with navigation. Of recent years the Rideau route, on account of its beautiful scenery, has attracted many tourists, and the majority of vessels upon it now are launches and various other kinds of pleasure craft.

The Murray Canal

Properly speaking the Murray Canal is not a canal at all, but merely a ditch or cutting about five miles long through the narrow isthmus that connects Prince Edward County with the north shore of Lake Ontario. The cutting is 120 feet wide at the surface of the water and 11 feet deep at low water and has no locks. By means of it the journey from the Bay of Quinte ports to the head of the lake is shortened, as vessels touching at the north shore ports are relieved of the necessity of rounding the peninsula of Prince Edward.

The first official notice of the project of cutting out a navigable channel between the Bay of Quinte and Wellers Bay was given in 1796, when the lieutenant-governor in council set aside a grant of 3000 acres of land for construction purposes. In 1815, however, this land was surveyed and

sold without any reference to the purpose for which it had been reserved. At various intervals in the next century the project was agitated and surveys were made, but the contract for the work was not awarded till 1882. The canal was opened for traffic in 1890.

The Trent Canals

The original design in making the Trent waterway navigable was to establish a line of through navigation from Lake Huron to the Bay of Quinte by way of Lake Simcoe, Rice Lake and the Trent River. The route was so tortuous, however, and required so many locks that the plan was never carried out, although a great deal of money was expended on it. In 1833 the legislature of Upper Canada appointed commissioners to carry out the work and gave them an initial appropriation of £2000. With this they built a small wooden lock at Bobcaygeon and improved the channel of the Otonabee River. Surveys were made and plans drawn up for works estimated to cost £495,515, and operations were begun on a larger scale in 1837. But the financial stringency occurring at this time necessitated the abandoning of the enterprise, and when the Union was effected the whole project was placed under the Board of Works, whose chairman, H. H. Killaly, wisely discouraged its continuance, saying that it would cost from £800,000 to £900,000, and could not be expected to be of more than local importance. Upon his recommendation the locks begun were finished and slides were constructed to facilitate the descent of timber.

In the session of parliament of 1907 it was decided to proceed with the improvement of the Trent River from the Bay of Quinte to Rice Lake by means of dams, locks and short stretches of canals.[1] On this section the locks are 175 feet by 33 feet with a depth of 8 feet 4 inches of water. From Rice Lake to Lake Simcoe, a distance of 124 miles, a six-foot navigation is afforded. A branch from this division at Sturgeon Lake runs to Lake Scugog, while the Holland River

[1] Seven contracts of an estimated value of $5,100,000 have been entered into for this work.

improvement, commonly known as the Newmarket Canal, and usually considered a part of the Trent system of canals, is under construction from Newmarket to Lake Simcoe. No provision has been made for the construction of the upper portion of the system from Lake Simcoe to Georgian Bay.

A notable feature in connection with the Trent canals is the two hydraulic lift locks, one at Peterborough and the other at Kirkfield. The lock at Peterborough is the largest of its kind in the world and lifts vessels of 800 tons vertically a distance of sixty-five feet, while that at Kirkfield has a vertical lift of fifty-four feet.

The Trent Canal system is only of local importance so far as transportation is concerned. In the construction of the canals, however, dams have been built that conserve the water-supply and render available a great deal of water-power which is of no small importance to the industrial development of Central Ontario.

The Burlington Bay Canal

This is a cut, through a sand-bar at the approach to Burlington Bay, by which entrance is effected to Hamilton harbour. Its construction was authorized by act of the provincial legislature in 1823, but vessels did not pass through it till 1830. It was not fully completed till two years later.

The Desjardins Canal

The Desjardins Canal, opened in 1837, extends from Burlington Bay to Dundas and was built by a company incorporated in 1826. Peter Desjardins, after whom the canal was named, was the originator of the scheme. It is slightly over three and a half miles long, thirty-three feet wide, and was navigable for vessels drawing seven and a half feet of water. It has long since fallen into disuse, being remembered chiefly for the Desjardins railway horror of March 12, 1857, when sixty lives were lost by a passenger train plunging into it through an open swing-bridge.

The Welland Canal

The people of Canada have always attached to the building of the Welland Canal a significance greater than that which usually surrounds an engineering work of the same magnitude. This is not unnatural. The Falls of Niagara had always been the subject of a peculiar and reverent admiration, and the work of man that overcame the obstacles presented by such an imposing phenomenon of nature was sure to be surrounded by an atmosphere of importance that works with a less stupendous setting could not have. The rapids of the St Lawrence could be overcome by towing or by comparatively short portages, but the tumbling cataracts of Niagara defied such an easy conquest. The twenty-seven miles that separated the waters of Lake Ontario from those of Lake Erie constituted an almost insuperable barrier to water communication between the upper lakes and the sea.

The construction of an artificial waterway connecting the two lakes thus marked an epoch in the industrial progress of Upper Canada, which had been greatly alarmed by commencement of construction, in 1817, of the Erie Canal, a waterway which it was thought would divert much of the upper lake traffic to New York, instead of allowing it to take its wonted course down the St Lawrence.

It is impossible to state definitely who first proposed the construction of the Welland Canal. It is sufficient to know that the first steps towards a practical solution of the Niagara Falls problem were taken in 1816. In that year Colonel Robert Nichol, who represented Norfolk in the house of assembly, acting on a report of a joint committee of both the Upper Canada houses, succeeded in introducing a bill providing funds for a survey of the different water routes between Lake Erie and Lake Ontario and between Lake Ontario and Lower Canada. But the measure never became law, and it remained for the inhabitants of the Niagara district, under the leadership of William Hamilton Merritt, to induce the government to provide the money for a survey of a portion of the route.

Merritt was a remarkable man—public-spirited, energetic, far-seeing ; but, like so many men of his type, he sometimes saw so far into the realms of the remotely possible as to make him forget the limitations of the actual. The range of his interests was wide. He kept a general store, manufactured salt, ran a cooperage establishment, operated a saw-mill and a flour-mill, was the prime mover in the Grand River navigation scheme, was deeply concerned in the improvement of the upper St Lawrence navigation, took a leading part in railway building, and was the driving force behind the construction of the Welland Canal. His mind grasped the manifold opportunities presented by the undeveloped resources of a new but rich country, and he was continually initiating and promoting schemes for their development. The pitfall of such an intuitive optimism is too precipitate action—the rash undertaking of promising schemes before ways and means have been carefully thought out and elaborated ; and Merritt did not lack this defect of his quality. The Welland Canal stands as a monument to his indefatigable energy, but the bungling of its finances and its tremendous cost must, on the other hand, be charged to his account.

When peace had come after the War of 1812, Merritt had hopes that he was to see realized the idea that had come into his brain when he was doing solitary outpost duty during the war. In 1818, when a scarcity of water occurred, he borrowed a spirit-level and with a few neighbours made a rough survey from the south branch of Twelve Mile Creek south to the Welland River, hoping to discover a means of a steady and sufficient supply of water from the Welland to run his mill. He estimated that the ridge of land separating the two streams had an elevation of thirty feet, a result which he afterwards learned was about half the true elevation. More than ever convinced of the feasibility of building a canal to connect Lakes Erie and Ontario, he began agitating the question, and the result was the petition, previously mentioned, requesting the government to survey the route for a canal between Lake Ontario and the Welland River. Money was appropriated for a survey, but

WILLIAM HAMILTON MERRILL

From a photograph

Mr Chewitt, the government engineer, for military reasons surveyed another route some fifty miles long extending from the Grand River to Burlington Bay.

Merritt and his associates thereupon took up a subscription to employ an engineer to survey the route they had proposed. Mr Tibbets, who had been employed as an engineer on the Erie Canal, was engaged for this purpose, and he pronounced the route practicable. Application was made for the incorporation of a company to build the canal and a charter was granted in 1824 to the 'Welland Canal Company,' which had a capital of £40,000. Soon afterwards Merritt left for York, Montreal, Quebec and New York State to secure subscriptions to the stock of the company. He obtained about £10,000, the first thousand pounds being subscribed in Quebec city. J. B. Yates of New York, one of the promoters of the Erie Canal, was the largest shareholder, having at the outset subscribed for £7500 worth of stock.

The original plan was to build a canal four feet deep from the Welland River to Lake Ontario, suitable only for boats of less than forty tons burden. The canal was to pass by means of a tunnel through the high ridge of land separating the two watersheds. The rapid descent from the brow of this elevation was to be made by an inclined railway, from the termination of which another canal was to extend to Twelve Mile Creek, from which entrance could be obtained to Lake Ontario. The upper reach of the canal was to be supplied with water from the Welland River. This ill-digested scheme seems never to have been considered very seriously by the company, for in 1824 three new engineers were employed to revise the project. The ceremony of breaking first ground was held late in 1824, but a new scheme was adopted in 1825 providing for a canal of larger dimensions having wooden locks 110 feet long and 22 feet wide with 8 feet depth of water. The route of the canal was to be from Lake Ontario to the Welland River, which was to be utilized as far as its outlet into the Niagara River. Vessels would then ascend the swift current of the Niagara to Lake Erie. The general section of the canal was to be twenty-six feet wide at the bottom and fifty-eight feet at the surface of the

water, except in the part through the ridge of land separating the two watersheds and known as the 'Deep Cut,' where there was to be a width of only fifteen feet at the bottom. To finance the larger scheme the capital was increased to £200,000. The government of Upper Canada gave a loan of £25,000 and subscribed for £50,000 of stock; the government of Lower Canada took £25,000 of stock; and the British government contributed £16,360, and gave a grant of 13,400 acres of land in Wainfleet township, on condition that government vessels and military stores should be allowed to pass free of toll.

Work was pushed with vigour, and it was expected that the canal would be formally opened for navigation in 1828, but on November 9 of that year, when only from ten days to a fortnight were required to have everything in readiness for letting in the water, the banks of the Deep Cut slipped in. This cut was one and three-quarter miles long through clay resting on an insecure bottom, and the engineers had excavated it to a depth ranging from thirty to fifty-six feet without taking any precaution to prevent the banks from caving in. The company was in a poor financial condition, and the directors were in a quandary when they were confronted with the extra expense necessitated by the slipping of the banks. The British government, however, saved the situation by coming to the rescue with a loan of £50,000 at four per cent interest.

The method adopted to overcome the difficulty at the Deep Cut was to raise the summit level of the canal nearly sixteen feet and take the supply of water from the Grand River by means of a feeder twenty and three-quarter miles long, instead of from the Welland River. This feeder was itself a navigable canal, being five feet deep and having a surface width of forty feet. In order to raise the waters of the Grand sufficiently to supply this feeder, a dam was built across it near the mouth.

Much as the directors may be criticized for lack of judgment, they cannot be reproached for want of energy. After the slide at the Deep Cut work was pushed ahead rapidly, and a year later, despite an early winter, the canal was

formally opened. The season was so late that the directors themselves had to make arrangements for two schooners, the *Anne and Jane* and the *R. H. Boughton*, the former of Youngstown, New York, and the latter of York, to pass through the canal. On November 27, 1829, these vessels started through the canal from Port Dalhousie and, after cutting through ice, in some places three inches thick, arrived at Buffalo on December 2.

The directors, however, were not satisfied with this partial completion of their plans. On account of the accumulation of ice, the portion of the Niagara River from the point where the Welland entered it to Lake Erie was not navigable for several weeks after Lake navigation began. Moreover, the current of the Niagara was swift and vessels from the head of Lake Erie had to go round the Niagara peninsula, a considerable distance out of their way, to gain entrance to the canal. It was therefore determined to push forward the original plan of connecting the canal with Lake Erie at Port Colborne. The capital stock of the company was increased to £250,000 and the government of Upper Canada gave a loan of £50,000. The work was completed in 1833. There were altogether forty wooden locks, the smallest of which was 110 feet long by 22 feet wide with a depth of 8 feet of water.

The government of Upper Canada in 1837 converted its loans into stock, and two years later decided to purchase all the stock held by private individuals. The purchase, however, was not completed till after the Union.

The canal has since been owned and operated by the government of Canada. It has been undergoing enlargement almost continually to keep pace with the increasing demands of Lake shipping. Lieutenant-Colonel Phillpotts in his report on canal navigation in 1839 stated that the wooden locks on the Welland were badly in need of repair, and recommended that they should be rebuilt of stone and made the same size as those of the Cornwall Canal, viz., 200 feet by 55 feet by 9 feet, and that the water necessary to operate them should be taken from Lake Erie instead of from the Grand River, which at times had proved an inadequate

source of supply. The improvement was begun in 1842, but the size of the locks constructed was only 150 feet by 26½ feet with 9 feet of water. By 1845 the enlargement had been completed from Port Dalhousie to the entrance of the feeder, and the feeder had been enlarged as far as Dunnville. This, together with the construction of the Port Maitland branch, enabled vessels to reach Lake Erie by a new and shorter route. The summit level was also lowered about eight feet to permit of the supply of water being obtained from Lake Erie.

The canal commission reporting in 1871 advised the further enlargement of the Welland Canal, and it was decided to undertake extensive alterations. The lock dimensions adopted throughout required locks 270 feet long and 45 feet wide, having a depth of 12 feet of water. From Port Colborne to Allanburg the route of the old canal was followed and the locks on it enlarged to the scale recommended, but from Allanburg to Port Dalhousie on Lake Ontario, a distance of eleven and two-third miles, it was deemed advisable to discard the old canal and build an entirely new waterway over a new route. In 1875 it was decided to make all the permanent structures not then under contract adaptable to a fourteen-foot navigation, but it was not until 1887 that this depth of water was available throughout the whole canal. Even before this enlargement was completed there were vessels on the upper lakes too large to pass through the locks, and in 1912, after much agitation on the part of Lake shippers and business men generally, it was decided to still further enlarge the canal at an estimated cost of $50,000,000. The plan proposed contemplates the use of the present channel, after widening, deepening and straightening, from Port Colborne to Thorold, whence a new cutting about seven miles long will be run to Lake Ontario, entering the lake about three miles east of Port Dalhousie. The canal will be twenty-five miles in length and will have seven lift locks, all of which are to be in the stretch between Thorold and Lake Ontario. Each lift lock will be 800 feet by 80 feet in the clear with 30 feet of water over the sills, and will have a lift of 46½ feet. All structures will be built to accommodate

a thirty-foot navigation, but the canal will be excavated only to a depth of twenty-five feet for the present. The important feature of the improvement is the size of the locks, the reduction in the number of them from twenty-five to seven, and the reduction in the time occupied by vessels passing from one lake to the other from eighteen hours to six. It is expected that the consequent use of larger lake vessels will bring about a reduction of about two cents a bushel in the freight rate on grain destined for the seaboard, and that a large proportion of the Canadian grain now being shipped by way of Buffalo and New York will be diverted to the St Lawrence route.

The Sault Ste Marie Canal

The slow development of commerce on Lake Superior was responsible for the comparatively recent construction of the Sault Ste Marie Canal to overcome the falls and rapids in the St Mary River connecting Lake Superior with Lake Huron. There are, it is true, the almost obliterated remains there of a small canal with a wooden lock that was built towards the close of the eighteenth century by the North-West Company to accommodate their fur boats. The survey for this was made in 1797, and the canal which resulted was about half a mile long, while the lock with which it was provided was 38 feet long, 8 feet 9 inches wide and had a lift of 9 feet.

Although in 1851 and 1852 several petitions by private individuals were presented to parliament asking for the incorporation of companies to build a canal to connect Lake Superior and Lake Huron, the project was not begun until after the completion in 1855 of the canal on the United States side of the river. A survey of the ground was made by the Dominion government in 1887, and contracts for the construction of the canal on St Mary Island were let in 1888 and 1889. The initial plan was that the single lock to be built should be 600 feet long and 85 feet wide, with a depth of 16½ feet of water on the sills at the lowest known water-level. But the

possibilities of the West as a wheat-producing country were forcing themselves upon shipowners, who brought pressure to bear upon the government to increase the lock dimensions. The result is that the present length of the lock is 900 feet, the width 60 feet and the depth of water on the sills 18 feet 3 inches at the lowest known water-level. This large lock permits of several vessels being locked through simultaneously. The canal was opened for navigation in 1895. The increase of traffic through it, due largely to the development of the West, has been astounding. In 1897, 4,947,065 tons of freight passed through the Canadian canal, and in 1912 this had grown to 39,669,655—a sevenfold increase in fifteen years.

Minor Canals

Fort Frances Lock.—At Fort Frances, near the outlet of Rainy Lake on the north side of Grand Falls, there is a single lock, which was originally intended to facilitate transportation between Lake Superior and the Red River country, the immediate object being to join the navigation of Rainy Lake with that of Rainy River and the Lake of the Woods. In 1875 work was begun at this point on a canal 800 feet long and 36½ feet wide, with a lock 200 by 36, having 7 feet of water on the sills. It was almost completed in 1878, when, on account of the construction of the Canadian Pacific Railway, the operations were discontinued and the outstanding accounts settled.

St Andrew's Lock and Dam.—On the Red River about fifteen miles north of Winnipeg is the St Andrew's lock and dam, which permits of water communication between Winnipeg city and Lake Winnipeg.

Grand River Improvement.—When the Welland Canal was under construction W. Hamilton Merritt agitated for the improvement of the Grand River from its mouth as far north as Galt. A company was incorporated in 1831 and in 1832 a joint stock company was organized to undertake the work. It was thought that the traffic arising from the rich gypsum beds and the products of the farms and of the forests along

the river would make it a profitable enterprise. A loan was obtained from the government, and grants were made by the town of Brantford and by the Five Nation Indians towards the construction. The work consisted of a series of dams, locks and cuttings which afforded a navigable waterway from two and a half to three feet deep extending between Dunnville and Brantford, a distance of sixty miles. On account of railway competition the canal rapidly fell into disuse, and it is now of value only for power development.

St Peter's Canal.—The St Peter's Canal connects St Peter's Bay on the Atlantic Ocean with Bras d'Or Lake, a salt-water estuary in Cape Breton Island. The building of this canal was begun in 1854 by the government of Nova Scotia and, after many suspensions, was completed in 1869 by the Dominion government. Its only lock was 122 feet long, 26 feet wide, with 13 feet depth of water. In 1875 the enlargement of the canal was begun and the lock was made 200 feet long, 48 feet wide, with 19 feet depth of water. The enlarged canal was opened for traffic in October 1879. In 1911 a contract was let for providing a new entrance from the Atlantic and for a new lock 300 feet by 48 feet to replace the existing structures.

Abortive Canal Projects

Canada, like nearly all countries, has had her share of abortive canal projects. Chief among these are the Shubenacadie Canal, the Baie Verte Canal, and the Chignecto Ship Railway, which, though not a canal, was designed to serve a like purpose.

Shubenacadie Canal.—The Shubenacadie Canal was projected to connect Minas Basin with Halifax Harbour. The scheme was broached in 1794 by John Wentworth, and two years later the first survey of the route was made. A subsequent survey was made in 1814 and 1815, but it was not until 1826 that a company with a capital of £60,000 was formed to undertake the building of an eight-foot waterway. A grant of £15,000 was sanctioned by the provincial government. When the canal was almost completed, it was finally aban-

doned, its failure as an economic measure being fully conceded. It is of interest to note that Samuel Cunard, later of ocean steamship fame, was one of the leading promoters.

Baie Verte Canal.—The government of the Maritime Provinces as well as the government of Canada had at various times from 1822 to 1873 considered the building of a canal to connect the waters of the Bay of Fundy with those of Baie Verte, on Northumberland Strait. The first survey was made in 1822, by order of the government of New Brunswick, by Robert C. Minnitte. Minnitte proposed a canal four feet deep, and ran his line through the valley of Au-Lac across the Missiguash Lakes and thence to the River Tidnish. Numerous other surveys were undertaken at the instance of New Brunswick, Prince Edward Island and the Dominion of Canada. Some of these had to do with canals from Shediac to Moncton and from Shediac to Dorchester, but most of them were concerned with the Isthmus of Chignecto route. A number of the engineers who reported on the project favoured a tidal canal, while others advised that a supply of fresh water should be procured for operating the proposed canal. However, all these reports brought the project no nearer realization.

Chignecto Ship Railway.—The difficulties in the construction of the canal were the remarkably high tides and the silt-laden waters of the Bay of Fundy. To obviate these difficulties, H. G. C. Ketchum, an engineer, projected a ship railway to transport vessels a distance of seventeen miles from Amherst, at the north of the La Planche River, to Tidnish, on Baie Verte. Ketchum showed the plans and details of the scheme at the Mechanics' and Manufacturers' Exhibition at St John, New Brunswick, in 1875, and in 1882 the Chignecto Marine Transport Company was incorporated, with a total share and bond capital of $5,500,000, largely English, to carry out the plans. In 1886 the Dominion government granted the company an annual subsidy of $170,602 for twenty years, or such portion of that time as might expire before the company earned seven per cent on its authorized share and bond capital. If the earnings exceeded seven per cent per annum, the surplus over and above

that amount was to be paid to the government until the whole subsidy paid had been refunded. The company, on its part, engaged to construct works capable of raising, transporting and lowering vessels of 1000 registered tons, with full cargo.

At the mouth of the La Planche the spring tide has a range of over forty-four feet, and operations were therefore begun at Amherst on a large dock equipped with gates thirty feet high to retain the water after the recession of the Fundy tide. This dock was 530 feet long, 300 feet wide and 40 feet deep, and was sufficiently large to accommodate at one time six vessels of 1000 registered tons each. Once a vessel was in the dock it was to be guided over a huge lift equipped with a ship carriage or cradle, which ran on two hundred and forty wheels. Power from twenty large hydraulic presses was then to be applied to the lift and the ship elevated to the level of the railway on land. Heavy locomotives were then to draw the carriage with its marine burden on double tracks at the rate of ten miles an hour to the terminus of the line, where, by similar means, it was to be lowered into the water. At Tidnish, the northern terminus, a dock with gates was not necessary because the tides of the Gulf of St Lawrence had a range of only from six to seven feet.

Practicable as the project seemed from an engineering point of view, it was never carried to completion. Good progress was made for a time and it was expected that the undertaking would be completed in 1892 ; but, owing largely to the Baring crisis, the company got into financial difficulty and construction had to be suspended. The government extended the time within which the ship railway was to have been completed and promised to extend it still further, provided the work were actually in progress and the company would give satisfactory assurances that the requisite capital to complete it had been obtained. These assurances, however, were not forthcoming, and the subsidy lapsed. Thus it comes about that the partially completed Chignecto ship railway remains only as a sorry monument to millions of dollars of wasted capital.

Proposed Canals

Ottawa River and Georgian Bay Canal.—The most pretentious of the projected Canadian canals is that proposed for connecting the St Lawrence River and Georgian Bay by improving the Ottawa and French Rivers. The government of United Canada procured engineers' reports on this route in 1858 and again in 1860. The first report recommended a ten-foot waterway having short canals overcoming the unnavigable stretches of river at a cost of $24,000,000; the second proposed the construction of dams and locks to overcome the rapids and falls, the estimated cost of which for a twelve-foot waterway was just half that of the first plan. Although railway development has since lessened the urgent need of the Georgian Bay Canal, the enormous pressure of the grain traffic on transportation facilities has led recently to a revival of the agitation for the building of this canal, which would shorten the distance between Montreal and Sault Ste Marie by about one-half as compared with the Welland route. In 1904 parliament provided an appropriation for a survey of the route. The report of this survey submitted in 1909 stated that a twenty-two-foot waterway covering the 440 miles between Montreal and Georgian Bay could be constructed with twenty-seven locks at a cost of $100,000,000. Nothing further has been done except to construct storage works on the upper Ottawa to regulate the flow of the river for power development purposes. However, a company, incorporated in 1894, having for its ostensible object the canalizing of this route, has carefully kept alive its charter privileges. The tremendous cost of the undertaking, and the time that would be consumed by vessels in passing through the locks, are the most serious drawbacks to the accomplishment of this project.

The Caughnawaga Canal.—The Caughnawaga Canal project contemplated the joining of the St Lawrence near Montreal with the Richelieu River and Lake Champlain by means of a canal. It was proposed in 1789 by Silas Deane, but the scheme was not actively taken up till 1847, when,

at the instance of a number of Montreal merchants, the government had the route surveyed by J. B. Mills. As a result of a survey made in 1854 by J. B. Jarvis, a different route from that chosen by Mills was recommended. In 1855 another engineer reported that the formation of the country in that district was not favourable to the construction of a canal. The scheme never survived the shock of this opinion.

In addition to building the various canals described, the government has found it necessary to deepen the navigable channel of the St Lawrence route at various places. The dredging of Lake St Peter, an expansion of the St Lawrence River between Quebec and Montreal, constitutes one of the most extensive works of this kind. The shallow channel winding through the lake presented serious obstacles to navigation early in the nineteenth century, when the size of ocean vessels began to be increased. Surveys were made in 1831 and again in 1838, and the dredging of a straight channel was begun by the government in 1844, but was suspended in 1847 from want of funds. In 1850 the Montreal Harbour Commission, which had been created in 1830, took over the work. The commissioners determined to follow the crooked natural channel, which was 11½ miles long and had a minimum depth of 10½ feet at low water. By 1860 they had deepened this to 17½ feet, by 1865 to 20 feet, by 1882 to 25 feet and by 1888 to 27½ feet. The improvement of the navigable channel by dredging and other means had to be undertaken also in the St Lawrence between Lachine and Prescott and through Lake St Clair. The dredging of the channel between Quebec and Montreal was kept up almost continuously during the season of navigation each year, so that in 1912 there was a 30-foot navigation available from tide-water to Montreal, a distance of over 100 miles, and a 14-foot channel from there to the head of Lake Superior. In 1909 the cutting of a 35-foot channel was begun between Quebec and Montreal.

The total length of all the canals on the St Lawrence route is seventy-four miles, and in a voyage from Montreal

to Lake Superior a vessel passes through forty-eight locks and is lifted a height of 553¼ feet. Five of the canals are operated and lighted by electricity—the Sault Ste Marie, the Welland, the Cornwall, the Soulanges and the Lachine.

Vessels using the St Lawrence route are subject to no tolls. These charges were abolished on all the government canals as an experiment in 1903, and in 1905 the abolition was made permanent. What the Dominion government forgoes in its adherence to this far-sighted policy may be judged by the fact that the freight traffic through all the Canadian canals in 1912 amounted to 47,587,245 tons. Through the Sault Ste Marie Canal in the same year there passed 39,669,655 tons; through the Welland, 2,851,915 tons; while through the St Lawrence canals there was transported a freight traffic amounting to 3,477,188 tons.

The total government expenditure up to March 31, 1912, in constructing, acquiring and enlarging canals has been $103,400,589, of which $20,593,866 was expended prior to Confederation.[1] The total amount expended for operation, maintenance and repairs has been $32,562,218. The benefit Canada receives for this large outlay, as well as for the annual maintenance charges, amounting to over $1,700,000, consists in the stimulus given to national prosperity by the development of a great inland water-borne traffic that is as free as that on the high seas.

V

THE DEVELOPMENT OF SHIPPING ON THE GREAT LAKES

THE Rebellion of 1837-38 ushered in a new era in Lake navigation as well as in government. As the two provinces were merged into one united Canada, so the individual vessel tended to lose its identity in the name of the line of vessels of which it formed a part. And as years

[1] This is exclusive of the outlay by the imperial government on the Carillon and Grenville Canals, the records of which were destroyed by the fire in the Ordnance Office in Montreal in 1852.

went on popular attention became centred more and more upon steamboat lines than upon single steamboats. There were a number of reasons for the tendency towards consolidation. First of all the Lake commerce had, with the longer routes made available by the construction of canals, grown to such proportions that there was plenty of traffic to keep a number of steamers under one management profitably employed. This meant a more frequent and a more efficient service; it reduced the expenses of operation, permitted of more extensive campaigns for traffic and tended to offset the disadvantages of a keen competition. For, although the traffic to be carried had grown, and was growing, at an enormous rate, the number of vessels to carry it had grown still faster. The result was such a ruthless, cut-throat competition as is only known to water-borne traffic. From 1840 to 1845 it was particularly keen, and fares were frequently reduced to such a price as to give no profit whatever. The result was the formation of lines of steamboats and the effecting of traffic arrangements to regulate freight and passenger rates.

On Lake Ontario and the River St Lawrence

But, although the merging of the individual vessel into the line was the tendency of the times, the lonely steamboat was not to be vanquished in a trice. There were vessels ploughing a more or less lonely furrow that could not by any means be called 'tramps.' Then, too, a vessel with outstanding characteristics, either as to speed or as to size, would always have its praises sung, no matter how large the line to which it belonged. One steamboat that stood high in popular estimation was the *Chief Justice Robinson*, a 400-ton vessel built at Niagara in 1842. For a number of years this boat plied between Toronto, Hamilton and the Niagara River ports, and, along with the *City of Toronto*, carried the mails between those places. The peculiar feature in her build was her bow, which had an enormous cutwater, not unlike a double-furrowed plough, for cutting through the ice.

The *Frontenac*, the second of that name, appeared about this time on the Toronto-Kingston route. She was a notorious free-lance and was in bad odour with most of the vesselmen because of the ruthless manner in which her owners slashed fares. On the Bay of Quinte route there was the *Prince Edward*, built in 1841. A year later the *Commerce* appeared on the route between Toronto and Hamilton. Before she was launched the *Lady of the Lake* had held the palm for speed, but the *Commerce* on her first trip beat her rival, and in honour of this auspicious victory she was named the *Eclipse*.

The individual steamboat, however, had to yield place to the line. One of the first as well as the most important of these early steamboat lines was the Royal Mail Line running a number of boats between Niagara, Hamilton, Toronto and various ports on Lake Ontario and the River St Lawrence. The Honourable John Hamilton was largely interested in it and for many years was its guiding spirit. The nucleus of the line was several new vessels built by the Niagara Harbour and Dock Company, a joint stock company formed at Niagara in 1840. The line began operations in 1841 at the opening of navigation and was very widely advertised. The main route was from Hamilton and Toronto to Kingston, and from Kingston the *Gildersleeve* and the *Brockville* made connection with Dickinson Landing, whence the passengers were conveyed by stage and boat to Montreal by the Upper Canada Stage and Steamboat Company. The company also had a steamer running between Lewiston, Niagara and Toronto. In 1843 the steamer at Kingston connected for the first time with vessels running to Montreal direct, the new steamers *Charlotte* and *Bytown* being placed upon the lower route.

Kingston was the terminus for the Lake steamers up to 1837, in which year the little *Dolphin* began plying from there to the head of the Long Sault Rapids. Passengers were taken by stage from Dickinson Landing to Cornwall, by steamer over Lake St Francis, thence by stage to the Cascades, where the well-known steamer *Chieftain* was waiting to convey them to Lachine. Here again they had

T Grindley

Prepared expressly for "

MAP OF
THE GREAT LAKES SYSTEM
SHIPPING AND CANALS
1912
Scale
0 10 20 40 60 80 100
Canals
Canals proposed
Vessel routes
Ports
QUEBEC
ONTARIO
STATES
OTTAWA RIVER
Ottawa Bay Ship Canal
Pembroke
Madawaska R.
Gatineau R.
Hull
OTTAWA
Carillon & Grenville
St Anne L.
St Ours Lock
MONTREAL
Soulanges
Chambly
Beauharnois
Cornwall
Farran's Pt
Rapide Plat
Galops
Dickinson's Landg
Cornwall
Morrisburg
Iroquois
R. St LAWRENCE
Smiths Falls
Canal
Perth
Rideau
Rideau Lakes
Cardinal
Prescott
Navigation
Belleville
Kingston
Trenton
Murray
Lake Champlain
Sacketts Harbour
Oswego
Charlotte
Oneida L.
Erie Barge Canal
Champlain Canal
Albany

to depend on the stage to carry them to Montreal. The first large steamer to run the rapids was the *Ontario*, which accomplished the task in 1840. The Lake steamers did not begin to run the rapids regularly till 1848, when the enlarged Lachine Canal was opened for traffic.

The Royal Mail Line was among the first to use iron steamers. The first iron-hulled boats appeared on the St Lawrence in 1843, when the *Iron Duke* and the *Prince Albert*, two ferry-boats made in Scotland but put together in Montreal, began to run between the latter place and St Lambert. The first iron steamer belonging to the Royal Mail Line was the *Magnet*, which was put in commission in 1847, and continued to run for over half a century, latterly under the name of the *Hamilton*. She was followed in 1848 by the *Passport*. Both were built on the Clyde, but were put together in Canada.

The advent of the railways affected adversely the Royal Mail Line and the other passenger lines. The Grand Trunk Railway was opened in 1855, and as it paralleled the route of the steamboats from Montreal to Toronto it soon cut heavily into their business. The result was that Hamilton, the largest and most influential shareholder in the company, was forced to sell out his interest to the Canadian Navigation Company, a joint stock company organised to take over the business of the line. Under the new management new boats were added from time to time, among these being the *Grecian* in 1864, and the *Spartan* in 1865, both built on the Clyde. The latter is still as sound as a bell and is performing a weekly service for the Richelieu and Ontario Navigation Company from Hamilton to Montreal under the name of the *Belleville*. Other vessels belonging to the line were the *Banshee* and the *Champion*, two of the older boats, and the *Athenian*, *Corinthian*, *Abyssinian*, *Egyptian*, *Corsican*, and the *Kingston*, afterwards the *Bavarian*. The company was absorbed in 1875 in the Richelieu Steamboat Company, which then assumed the now well-known name of the Richelieu and Ontario Navigation Company.

Various other 'through' lines of boats, as they were called, were formed about the middle of the century for

the Lake Ontario and River St Lawrence traffic. In 1850 several schooners, among which were the *Governor* and the *Western Miller*, ran between Toronto and Halifax, bringing back from the latter port fish from the Maritime Provinces, and fruit, sugar and other West Indian products. At the same time a through line of steamers began a service between Hamilton and Montreal, calling at the larger ports on both the Canadian and United States sides of the lake, their scheduled time for the trip being thirty-three hours. In 1852 there were six steamboats on this route—the *Champion*, the *Highlander*, the *Mayflower*, the *New Era*, the *Arabian* and the *Maple Leaf*. The line, however, was not a profitable one and was discontinued in 1853.

Considerable trade was done between Canadian and United States ports. As early as 1843 there was a line of steamboats, commonly known as the Oswego Line, running between Oswego and New York direct, without transhipment of passengers or goods. To feed this line there were the steamboats *St Lawrence*, *Oneida* and *Express* plying between Oswego and the ports on Lake Ontario and on the River St Lawrence, while a line of schooners connected Oswego with Lake Erie and the upper lake ports. There was also a daily mail line between Toronto and Rochester on which the *Princess Royal* and the *Admiral* did service.

The American Mail Line, however, was equipped with the largest and most luxurious steamers. In 1856 its boats were the *Bay State*, the *Cataract*, the *Northern* and the *Niagara*. The route followed by this fleet was from Niagara to Toronto, Rochester, Oswego and Ogdensburg. Along with the majority of the steamship companies this line went into liquidation in 1858 as a result of the financial panic of 1857.

Competition was very keen, especially between the passenger lines; and there were always a number of free-lance steamers, such as the second *Frontenac*, that at times could cut prices ridiculously low. There were, too, a considerable number of freight boats that also carried passengers. Depending on freight for their revenue, the passenger income was like a bonus to them, and they considered themselves

justified in offering very low fares. The principal of these freight-passenger lines plied between Toronto and Montreal and in 1852 included among its fleet the *Britannia*, the *Comet*, the *Dawn*, the *Free Trader*, the *Ottawa* and the *Ontario*. Another freight-passenger line giving a very efficient daily service on the Hamilton-Toronto-Montreal route was that of Jaques, Tracy and Co. On account of the severity of competition the personnel of the passenger lines was constantly changing, and not many of the combinations were able to hold together for more than a few years.

On the lower St Lawrence there was the same ruthless competition. Between Montreal and Quebec the Molson Line, which started in 1809 with the *Accommodation*, was the pioneer. John Molson had tried in vain to secure from the government a monopoly of the steamboat business on the St Lawrence, as Fulton had done in New York State. The first competing line with which he had to contend was that of John Torrance and Co. This firm put a number of combined steamboats and towboats on the route and later the steamboats *St George*, *British America*, *Canada* and *Montreal*. About 1845 the *John Munn* appeared. This vessel was 400 feet long—the largest river steamer that has ever navigated the St Lawrence.

In 1845 the Richelieu Steamboat Company was formed. It began its career by running two small market boats between Sorel and Montreal, and, in 1856, put two small steamers, the *Napoleon* and the *Victoria*, on the route between Montreal and Quebec. Soon a fourth competitor appeared in the firm of Tate Brothers, with the *Lady Elgin* and the *Crescent*, formerly the *Lady Colborne*.

Competition had become so intense that the cabin fare between Montreal and Quebec, including meals and stateroom, had been reduced to one dollar and the steerage to twelve and a half cents. The rivalry was not, however, confined to fares. The crews did their utmost to make their boats surpass their competitors in speed, and the incoming steamers, with every possible ounce of steam on and vast clouds of smoke and sparks issuing from their funnels, were a

thrilling spectacle. The public, too, entered into the spirit of the contest, assembling in great crowds on the wharves to witness the arrival and the departure of the steamers. As was to be expected, however, the struggle ended by a terrible accident. The *Montreal*, loaded heavily with over 400 passengers, most of whom were Scottish immigrants, caught fire on the river, and in the panic that ensued 253 people were either drowned or burned to death. As a result of this calamity, an arrangement was made among the competitors to withdraw some of the boats, and the bulk of the business fell to the Richelieu Steamboat Company, which has continued to hold it ever since.

On the Upper Lakes

Lakes Superior, Huron and Erie had no such self-contained traffic in the first half of the nineteenth century as had Lake Ontario. The most important route until the middle of the century was from Buffalo to Chicago, at first for the immigrants passing westward, and later for the produce which these same immigrants as settlers sent eastward. Closely rivalling this route, in volume of traffic, was the shorter one from Buffalo to Detroit, connecting the Eastern States with the fertile country between Detroit and Chicago. The greater part of the traffic on these lakes originated in the United States and was destined for United States ports. The development of the country on the Canadian side was relatively much slower than that on the American side, and it was not until a recent date that the Canadian traffic on the upper lakes assumed the proportions warranted by the rich natural resources of the country.

Lake Superior was cut off from the commerce of the other lakes till after the middle of the century. Prior to the construction of the United States canal at Sault Ste Marie, the traffic on it was almost entirely local. So small was the inter-lake traffic that a single horse and cart was sufficient to do the portaging at Sault Ste Marie for a number of years, but later two-horse wagons were substituted, and in

1850 a tramway, operated by horses and capable of moving 300 or 400 tons of freight in twenty-four hours, was constructed.

The early steam vessels, as also the sailing vessels, were nearly all hauled over the portage from Lake Huron during the winter. Steam navigation was inaugurated by the propeller *Independence*, which made the land journey around the falls of St Mary in the autumn of 1844 and began her trips on Lake Superior the next summer. The first steamer plying between the north shore ports was the *Julia Palmer*, which was carried overland from Lake Huron in 1846. About the same time the schooner *Napoleon* was dragged over the portage and a little later was equipped with an engine. The side-wheeler *Baltimore* followed in 1847, and soon afterwards the steam fleet on the lake was augmented by the propellers *Manhattan*, *Monticello* and *Peninsular*. The opening of the United States canal at Sault Ste Marie in 1855 brought about a more rapid development of the iron and copper ore deposits on the shores of the lake, and the steam shipping increased in proportion.

On Lake Huron the earliest steamer was probably the *Bruce Mines*, which was used in carrying copper ore between Bruce Mines and Montreal. This lake was the link connecting Lake Superior with the lower lakes, but up to the middle of the century only a small traffic originated on its shores. Over Georgian Bay, however, quite a heavy traffic coming from Toronto via Lake Simcoe passed *en route* to Sault Ste Marie and ports on Lake Superior. On Lake Simcoe the steamer *Morning* ran from Holland Landing to Orillia, whence a stage carried passengers to Sturgeon Bay. From Sturgeon Bay the steamer *Gore*, which, in 1845, had left Lake Ontario to ply on this route, ran weekly to Sault Ste Marie. The *Gore* was the first passenger steamer on Lake Huron and Georgian Bay, and together with the *Rescue* and the *Ploughboy*, which formerly ran on Lake Erie, handled the traffic for a number of years. The *Kaloolah*, a low-pressure fast steamer, appeared later on the route between Sturgeon Bay and Sault Ste Marie. On the completion, in 1854, of the Northern Railway connecting Toronto and Collingwood, the latter

port was made the eastern terminus of the steamboats running to Sault Ste Marie and Lake Superior ports.

On Lake Erie Canadian shipping was small indeed when compared with the American. Not only was there little traffic originating on the Canadian side, but the north shore afforded no really good natural harbours. The immigration pouring into the Western States was the mainstay of the steamboat traffic prior to 1850. Numerous steamers ran from Buffalo to Cleveland and Detroit, and from Buffalo to Milwaukee, Chicago and other ports on Lake Michigan. By 1839 a regular line of eight steamers was in operation between Buffalo and Chicago, making the return trip in sixteen days. The flourishing Lake traffic encouraged the building of fine large steamers. In 1839 there was built at Huron the *Great Western*, the first steamer with an upper-deck cabin, a feature of marine architecture that was soon to become very common and popular. By 1845 the Lake commerce had so expanded that there were three lines connecting Buffalo with Chicago and intermediate ports.

Effect of Railways

An epoch in the history of the Great Lakes shipping was ushered in with the advent of railways after 1850. The railways affecting the Lake traffic were the Northern, the Great Western, the Grand Trunk and the lines on the south shore of Lake Erie connecting Buffalo and Chicago. In 1852 the completion of a section of road between Cleveland and Toledo filled the gap that separated New York and Buffalo from Chicago. The Northern Railway, connecting Toronto with Collingwood, was ready for use in 1854, and in the same year the Great Western, joining Hamilton and Windsor, was completed. Rail communication was established between Montreal and Sarnia by the Grand Trunk, which was opened in 1855.

The railway lines affected shipping in two very dissimilar ways. In the first place, the added competition operated like the principle of selection in natural history, and only

the fittest of the Lake craft survived. Competition was first felt in the passenger business, in which speed counts for so much, and soon its effects were apparent in the transportation of such perishable commodities as fruits, dairy produce and fresh meats. During the winter months the railways gained a firm hold on the shipping community and gradually took away from the merchant marine most of the freight with the exception of bulky commodities such as grain, ore, lumber and other articles that do not require rapid transit. Shipowners, however, did not submit without a struggle, and in the winter of 1852-53, when the competition of the Lake Shore rail system was first experienced, they ran a line of stages from Buffalo to Detroit by way of Hamilton, London and Chatham. This plan was soon abandoned. As railway competition lowered freight rates the smaller and older vessels were discarded, to be replaced by big iron and steel freighters and immense steam barges, capable not only of carrying large cargoes themselves, but also of towing several other barges laden deep with freight.

While the railways eliminated many of the less efficient craft, they added to the marine many splendid lines of steamers that were used in conjunction with the railways to extend the reach of the transportation systems. The Great Western Railway operated on Lake Ontario a fine fleet of steamers consisting of the *Europa*, *Western World*, *America* and *Canada*, and a line of boats between Sarnia and Lake Superior ports. On Lake Erie, the Michigan Central, to feed its railway running through Southern Michigan to Chicago, had a number of steamers plying between Buffalo and Monroe, Michigan. The first steamboats on this line were put into commission in 1848. They consisted of the *Baltimore*, *Ben Franklin*, *Detroit*, *De Witt*, *Clinton*, *Julius* and *Southerner*. The next year the *May Flower*, the largest vessel then on the Great Lakes, and the *Atlantic*, two superb steamers, 282 feet and 267 feet in length respectively, were added to the fleet. These were followed by the *Buckeye State* and the *Ocean*. When railway competition began to press hard upon the Michigan Central's

line the directors rose to the occasion, and in 1853-54 built two mammoth steamers, the *Western World* and the *Plymouth Rock*, which for forty years were not surpassed either in size or in the excellence of accommodation afforded. The *Western World*, which was 348 feet long, was of 2002 tons burden and cost $250,000. They were too large and too costly of operation to be profitable, and in 1857 were taken off the route and converted into dry-docks.

The Great Western Railway ran the fast upper-cabin side-wheeler *Saginaw* from Port Stanley to Cleveland, replacing it in 1879 by the *City of Montreal*. This company also operated a line of boats from Sarnia to Chicago and in 1864 had six steamers on this route. At the same time eight steamers chartered by the Grand Trunk Railway were running between the same places. In 1870 the Sarnia-Lake Superior Line was inaugurated with the *Manitoba* and the *Acadia*, and by 1878 two new steamers, the *Ontario* and the *Quebec*, had been added. The Windsor-Lake Superior Line, consisting of the *Asia* and the *Sovereign*, was absorbed in 1875, the united companies being known as the Northwest Transportation Company.

An American line of steamers ran from Collingwood to Chicago in connection with the Northern Railway shortly after the completion of that line. It consisted of the *Montgomery*, *Hunter*, *Evergreen City* and *Ontanagon*, four steamers ranging in size from 600 to 879 tons burden.

Plying between Collingwood, Sault Ste Marie and the Lake Superior ports were other steamers in addition to the *Ploughboy* and the *Rescue*. The *Algoma* was on this route, and in 1866 the *Wolverine* was added, to be followed later by the *Waubuno* and the *Silver Spray*. Among the steamers on the Pioneer Route, as it was called, between Collingwood and the ports of Lake Superior, were the *Chicora*, *Francis Smith* and *Cumberland*, which were followed in a few years by the *City of Owen Sound*, the *City of Winnipeg*, the *Northern Belle* and the *Northern Queen*. Of recent years the Georgian Bay-Lake Superior fleet has been strengthened by the splendid steamers of the Canadian Pacific Railway Company, which began their trips in 1884.

In dealing with the relation of the railways to Lake traffic the treatment would not be complete without some mention of the modern car ferry, a type of vessel distinctive of the Great Lakes and their connecting waters. This class of vessel appeared in the late sixties as a result of the desire of the railway to extend their traffic systems as far as possible in order to compete successfully with the steamship lines. River car ferries for service on the Detroit and St Clair Rivers were the first to come into use, and one of the earliest was the *Great Western*, a wooden vessel built in 1866 and still in use in the Grand Trunk Railway's Windsor-Detroit service. This ferry is 237 feet long and can carry twelve 36-foot freight cars, or six standard passenger cars, each 72 feet long. Most of the ferries, however, were constructed of iron or steel.

Besides the *Great Western*, the Grand Trunk operates the *Huron* and the *Lansdowne* in the Windsor-Detroit service. The former is an iron vessel 240 feet long and was built in 1875, while the latter, which was built in 1884, is 319 feet 5 inches long and has a capacity of sixteen 36-foot cars, four more than the *Huron*. In the same service the Michigan Central Railway has four car transports, the Canadian Pacific two and the Père Marquette-Wabash one. The last-named company operates the *Père Marquette No. 14*, which has a length of 350 feet and is the longest of all the river car ferries.

The car transports for river service are big, strong, blunt-nosed craft with all their machinery placed low in their hulls so as to leave the main deck clear for cars. All the river car ferries are paddle-wheel steamers and are supplied with enormous power in order to be able to break their way through the ice in winter. Some of them are supplied with bow propellers and one of them, the Michigan Central *Transport*, is equipped with both a bow and a stern propeller. These are used to suck the blocks of ice away from the slip to allow the vessel to dock.

There are gigantic car ferries on Lake Michigan, Lake Erie and Lake Ontario. Those on Lake Erie are employed almost entirely in the coal-carrying trade, although, like most of the Lake car transports, they carry passengers also. They ply from Conneaut and Ashtabula, Ohio, to Rondeau,

Port Stanley, Port Burwell and Port Dover. Although all of them are vessels of immense power, specially constructed for crushing their way through thick ice-fields, they never leave port in winter without three weeks' provisions on board. The car ferry service on Lake Erie was begun by the famous *Shenangoes* in 1895, one of which, the *Shenango No. 1*, was burned at Conneaut in 1906. They were each supplied with engines of 3500 horse-power. The latest addition to the transport fleet on this lake is the *Ashtabula*, which began plying between Port Burwell and Ashtabula in 1906. On her test trip she covered the distance, under load, between these ports at an average rate of fifteen and a quarter miles an hour, with a sea running. She is equipped with water-tight bulkheads and a system of water ballast compartments which adds greatly to her steadiness in going through ice and in gales. She carries on a single trip thirty cars, each thirty-eight feet long and capable of holding sixty tons of coal.

There is only one car transport on Lake Ontario—the *Ontario No. 1*, operated by the Grand Trunk Railway between Cobourg and Charlotte, the port of Rochester—length, 316 feet; beam, 54 feet; depth, 20 feet. She draws 15 feet of water. She is of steel construction and is one of the most powerful vessels on the lake, being propelled by twin screws, giving her a speed of seventeen knots an hour. She carries passengers regularly, and for excursion business has a passenger-carrying capacity of 1000. Under her main passenger deck is what has been called a miniature freight yard—four tracks having a capacity of thirty ordinary freight cars. Like the vessels of the same class on the other lakes, she is an ice-breaker and makes her trips throughout the entire year.

Although the railways at first tended to deprive the steamboat lines of some of their traffic, they soon added very materially to the Lake tonnage by opening up new country. Perhaps the most outstanding sign of this is the large water-borne traffic over the upper lakes between the West and the manufacturing and industrial centres of the East. The heavy iron and copper ore traffic between Lake Superior and Ashtabula, Conneaut, Erie and other ports on the south

shore of Lake Erie was, of course, never affected by railway competition. Neither could the railways offer serious competition in the transportation eastward of the lumber cut on the shores of Lake Michigan, Georgian Bay and Lake Huron. These two commodities, ore and lumber, together with the grain from the prairies, now form the bulk of the traffic on the upper lakes. The principal commodities carried westward on the return trip are coal and various manufactured articles.

Every autumn there is a great demand for vessels to carry the grain of the western provinces of Canada from the head of Lake Superior to Montreal or to Buffalo. Approximately 110,000,000 bushels of Canadian wheat passed eastward through the canals at Sault Ste Marie during the autumn of 1912. It has been a matter of surprise and regret to Canadians that so large a proportion of this wheat finds its way to Europe by way of Buffalo and New York rather than by the all-Canadian route by way of Montreal. Before the adoption of free trade by Great Britain in 1846, Canadian grain had a preference in the mother country; but when the corn laws were repealed and when, three years later, the St Lawrence was opened to the shipping of all nations, commercial relations with the United States became more intimate and a large portion of Canadian grain passed out of the country through United States channels. It does so still. In 1912, for instance, 45·4 per cent of all the wheat that passed through the Canadian canal at Sault Ste Marie reached the ocean by way of Buffalo, although the all-water freight rate from Fort William to Montreal in November was only 7·129 cents a bushel, as compared with 8·616 cents a bushel for the rail-and-water freight rate from Fort William to New York via Buffalo. The reasons for the preference given New York over Montreal, despite the higher cost of transportation to that point, are: the greater availability there of ocean tonnage, lower ocean freights to Europe and lower ocean insurance rates. The average season rate from Montreal to the United Kingdom in 1912 was 25½ cents per $100 as compared with 15 cents from New York. It is evident, therefore, that a large

percentage of Canadian grain will continue to find its outlet to Europe through United States channels until the further improvement of the St Lawrence route for ocean steamers will lower insurance rates, and until a larger ocean tonnage is available at Montreal to allow grain dealers to make immediate shipments.

The passenger business of the upper lakes has increased rapidly of recent years. The bulk of it is from Ontario and is handled by the Northern Navigation Company and the Canadian Pacific Railway steamers, the vessels of the former company plying between Sarnia and Georgian Bay ports and Lake Superior ports, while those of the latter run between Port McNicoll on Georgian Bay and Fort William on Lake Superior. On Lake Erie the Canadian passenger traffic is limited, only a few passengers being carried to American ports. The American passenger traffic on this lake is, however, very heavy, and some of the largest and finest passenger steamers on all the Great Lakes ply between Buffalo, Cleveland and Detroit.

But on Lake Ontario and the River St Lawrence the shipping is overwhelmingly Canadian. The freight carried consists chiefly of coal, manufactures and agricultural products, especially cheese and apples and other fruits. The passenger traffic is controlled by the Richelieu and Ontario Navigation Company, which by a process of consolidation has now obtained a virtual monopoly of the business. The principal passenger routes are from Hamilton and Niagara to Toronto, and from Toronto via Charlotte, in New York State, to Montreal.

VI

PRESENT-DAY GREAT LAKE LINES

CANADIAN shipping on the Great Lakes, both for passengers and for freight, is in the hands of a few large corporations, each controlling many vessels. This is particularly true of the passenger business. Overshadowing all these shipping corporations is the Richelieu

and Ontario Navigation Company, which, up to 1912, controlled the passenger traffic of Lake Ontario and the River St Lawrence. In that year this company brought its policy of absorbing other steamboat companies to a head by obtaining control over all the important Canadian passenger and freight lines of the Great Lakes. The early history of this line, which began, under the name of the Richelieu Steamboat Company, by running a small market boat, the *Jacques Cartier*, between Sorel and Montreal in 1845, has already been given. Eleven years later it entered into the already keen competition for the passenger trade on the lower St Lawrence by putting two small steamers, the *Victoria* and the *Napoleon*, on the route between Montreal and Quebec. When the *Montreal* was burned a halt was called in the competition on the lower St Lawrence and an arrangement made whereby the company benefited materially.

Since 1857 the company has prospered and grown rapidly. The secret of its success has been its consistent policy of keeping down competition by absorbing rival lines. This was initiated in 1861, when the St Peter's Navigation Company, which operated a line of boats on the same route as the Richelieu Steamboat Company, was taken into the latter concern. The greatest stroke, however, prior to the extensive consolidation of lines consummated in 1912, was effected in 1875, when the tottering Canadian Navigation Company was purchased and the name of the consolidated companies changed to that which they still bear—the Richelieu and Ontario Navigation Company. By this purchase the range of the company's operations was extended from the River St Lawrence to Lake Ontario.

The St Lawrence and Lake Ontario system is divided into four sections. The first extends from Chicoutimi on the Saguenay to Quebec, through a region famous for its bracing air, its fine fishing and the grandeur of its scenery. At Tadoussac at the mouth of the Saguenay and at Murray Bay on the St Lawrence the company maintains splendid summer hotels for the accommodation of tourists. On this route are the steamers *Murray Bay*, *Tadousac* and *Ste Irénée*. The last-mentioned steamer was formerly the *Canada*, built

in 1866. The new steamer *Saguenay* was placed in commission in 1912. This vessel is 285 feet long, 58 feet wide and draws 12 feet of water, and is handsomely finished in costly woods and equipped with glass-enclosed observation parlours.

The second section extends from Quebec to Montreal and is served by the new steamers *Montreal* and *Quebec*. These are the largest river passenger steamers in Canada, 340 feet long, and have a normal speed of seventeen miles an hour. They make their trips during the night and each has berth accommodation for about 750 passengers.

The third section presents a water route unrivalled for scenery in America. It extends from Montreal to Toronto and on the downward trip includes the exciting experience of 'running the rapids.' The steamer in its descent is buffeted about by the plunging waters and every moment seems to be in danger of being hurled upon the jagged rocks that protrude above the tumbling waves, but, when the danger appears greatest, a cross current, utilized by the skilled pilot, turns the vessel out of harm's way. The steamers *Rapids King*, *Rapids Queen* and *Rapids Prince*, the last mentioned fitted for burning oil as well as coal, are used in this service.

At Prescott the passengers are transferred to one of the Lake steamers, the *Kingston* or the *Toronto*, which takes them through the beautiful Thousand Islands of the upper St Lawrence to Kingston, whence the steamer proceeds to Toronto, calling at Charlotte. The company has also recently put a new steamer, the *Rochester*, on the New York State Shore Line, sailing from Youngstown by way of Charlotte and Oswego through the Thousand Islands to Ogdensburg.

A weekly—formerly a tri-weekly—service from Hamilton and Toronto to Montreal through the Murray Canal and the Bay of Quinte is maintained by the old steamer *Belleville*. In 1913 several express freight and passenger steamers were added to this route, and a service was established between Montreal and Fort William.

The consolidation effected in 1912 makes the Richelieu and Ontario Navigation Company practically master of the

Canadian traffic on Lakes Erie, Huron and Superior as well as on Lake Ontario and the River St Lawrence. The companies included in the amalgamation are the Inland Lines, the Niagara Navigation Company, the Hamilton Steamboat Company, the Turbine Steamship Company which owns the *Turbinia*, the pioneer turbine screw steamer in Canada, the Thousand Islands Steamboat Company and the St Lawrence River Navigation Company. The merger has a capitalization of $15,000,000 and owns over seventy steamers. In fact, it has complete control over all the important lake and river lines from the Saguenay to Sault Ste Marie.

The Inland Lines fleet consists of fourteen bulk and package freight steamships, engaged principally in the grain trade. The largest vessel in the fleet is the *Midland Prince* of 5141 net registered tons, and the smallest, the *Dundurn* of 632 net registered tons, which carries passengers and freight between Hamilton, Toronto and Montreal.

The Niagara Navigation Company, connecting Toronto with Niagara and Lewiston, had for its first steamer the steel side-wheeler *Chicora*. She was built in England for blockade-running in the American Civil War. The war was over before she could be put to the use for which she was designed, and she was accordingly transferred to the route between Collingwood and Sault Ste Marie. While engaged in this service she transported General Wolseley and his troops on their way to quell the first North-West Rebellion. She was secured by the Niagara Navigation Company, which was formed in 1878. The *Chicora* was the solitary boat of the company on the Niagara route till 1888, when the *Cibola*, which was burned in 1895, was added. The *Chippewa*, built at Hamilton by the Hamilton Bridge Company, was put on the route in 1893, to be followed by the *Corona*, built in Toronto by the Polson Shipbuilding Company in 1896. The latest addition to the fleet is the *Cayuga*, a splendid four-decked steamer built in 1907 for the day excursion business. Prior to its absorption by the Richelieu and Ontario Navigation Company the Niagara Navigation Company obtained control of the Turbine Steamship Company, operating the *Turbinia*, and of the Hamilton Steamboat

Company, which ran two steamers between Hamilton and Toronto. The latter company commenced business in a very small way in 1887, running the little steamer *Mazeppa* between Hamilton and Burlington Beach. The next year the *Macassa*, a steel Clyde-built passenger steamer 155 feet long, began her trips between Toronto and Hamilton. She was followed by another Clyde-built boat, the *Modjeska*, some thirty feet longer.

The Thousand Islands Steamboat Company and the St Lawrence River Navigation Company, two other lines included in the recent Richelieu and Ontario consolidation, are two small lines operating at the foot of Lake Ontario and in the upper St Lawrence. The Lake Ontario and Bay of Quinte Steamboat Company, which was not included in the amalgamation until 1913, plies between Charlotte, Port Hope, Cobourg, Bay of Quinte ports, Kingston and the Thousand Islands. It operates the steamers *Caspian* and *North King*. The former was one of the first iron steamboats to navigate Lake Ontario, having been launched in 1846.

From Kingston the Rideau Lakes Navigation Company runs the two small steamers *Rideau King* and *Rideau Queen* through the picturesque Rideau lakes and canal system to Ottawa. The Ottawa River Navigation Company maintains water communication between Ottawa and Montreal. In 1842 the *Porcupine* plied between Ottawa and Grenville and the *Oldfield* on the lower reach of the Ottawa River from Carillon to Montreal. In 1850 the *Lady Simpson* was put in commission and was followed by the *Atlas*, *Prince of Wales*, *Queen Victoria*, *Alexander* and *Sovereign*. The steamers now on the route are the *Duchess of York*, *Empress*, *Princess* and *Victoria*. The freight traffic is handled by a number of small steamers owned by the Ottawa River Forwarding Company and the Ottawa Transportation Company.

The Northern Navigation Company, now part of the great Richelieu and Ontario system, is itself the result of various consolidations, and serves as the lake division of the Grand Trunk Railway. The constituent companies composing the original Northern Navigation Company were

in the Georgian Bay service—the North Shore Navigation Company, organized in 1880, and the Great Northern Transit Company, organized ten years later. In 1900 the company purchased the Northwest Transportation Company, which was a combination, previously described, of the Sarnia-Lake Superior Line and of the Windsor-Lake Superior Line. By this means the range of the company's operations was extended from Georgian Bay to Lake Huron and Lake Superior.

The company to-day dominates the passenger and freight business of Western Ontario with Lake Superior ports and does an immense tourist trade among the far-famed Thirty Thousand Islands of Georgian Bay. From Sarnia it runs the *Hamonic*, the *Huronic* and the *Saronic* to Fort William, Port Arthur and Duluth. The package freight is carried west by the *Ionic* and the *Doric*, which are usually loaded with grain and flour on the east-bound voyage. The Georgian Bay and Mackinac route is served by the *Germanic*, *Majestic* and *City of Midland*, which sail from Parry Sound, touching at Collingwood, Meaford, Owen Sound and the ports on the North Channels, to Sault Ste Marie and Mackinac Island. The little twin-screw steamer *Waubic*, of 244 tons net register and specially designed to navigate the winding channels among the islands of Georgian Bay, maintains a daily service throughout the week, except on Sunday, between Penetanguishene and Parry Sound.

The *Hamonic* of the Northern Navigation Company's fleet is regarded as the finest and fastest passenger and freight vessel on the Great Lakes. She was built by the Collingwood Shipbuilding Company in 1909 and is 365 feet long, of 50 feet beam and 27 feet moulded depth. She has five decks and is equipped with eight watertight compartments so as to be practically unsinkable. Her hold has a capacity of 3500 tons of merchandise and she has accommodation for 470 passengers besides a crew of over 100 men. The maximum power of her engines is 7000 horse-power, and this is capable of driving her through an ordinary sea at a speed of twenty-three miles an hour. The company's newest and largest passenger vessel is the *Noronic*, launched

in 1913 at the Western Dry Dock and Shipbuilding Company's dry-dock at Port Arthur. She is 385 feet long, of 52 feet beam and 29 feet depth of hold, has a speed of 19 miles, carries 3500 net tons of freight, and has accommodation for 600 passengers, while her dining-rooms seat 300 people at a time.

On the completion of its transcontinental line the Canadian Pacific Railway put a fine fleet of steamers on the upper lakes to run in connection with its rail lines. Its first steamers were the *Algoma*, the *Athabasca* and the *Alberta*. The *Algoma* was the old *City of Toronto* that years before had plied between Toronto and Hamilton. She was totally wrecked in a fierce gale on Lake Superior in 1885. She was replaced by the *Manitoba*, of 1620 tons, built at Owen Sound by the Polson Shipbuilding Company. The *Alberta* and the *Athabasca*, which were put on the route in 1884, are vessels of about 1440 tons each, built on the Clyde by Aiken and Company of Glasgow. The latest additions to the Canadian Pacific Railway upper lakes fleet are the *Keewatin* and the *Assiniboia*, both of which are steel Clyde-built ships. All the Canadian Pacific vessels in this service, as well as those of the Northern Navigation Company, are equipped with wireless telegraphy. The Canadian Pacific steamships up to the season of 1912 made Owen Sound their eastern terminus, but in that year Port McNicoll, where the company has erected docks and large grain elevators, was chosen. Port McNicoll has advantage over Owen Sound in being nearer the seaboard and having easier railway grades.

Most of the Canadian bulk freighters in the inter-lake traffic belong to the grain fleet, which has a carrying capacity of 8,000,000 bushels at one trip. The Montreal Transportation Company, founded in 1868, owns the well-known 'Mount' steamers, the *Fairmount*, *Glenmount*, *Kenmount*, *Rosemount*, *Stormount*, *Westmount*, and the *Windsor* and the *Advance*, and the *Tynemouth*, launched at Middlesborough in 1913, whose Diesel oil engines transmit power electrically to the propellers, the first vessel of her kind on the Great Lakes, as well as a large fleet of sailing and towing vessels aggregating nearly 20,000 tons net register.

The Chicago and St Lawrence Steam Navigation Company owns one of the largest freighters on the Lakes—the *James Carruthers*, launched in 1913 from the yards of the Collingwood Shipbuilding Company, 550 feet in length, 58 feet beam, and 31 feet moulded depth, with a hold capacity of 375,000 bushels of wheat—and the *E.B.Osler*, *W.D. Matthews*, *G. R. Crowe*, *Iroquois* and *Algonquin*, all large boats. The Algoma Steamship Line, owned by the Algoma Central Railway, operates the *Agawa*, *Thomas J. Drummond*, *Leafield* and *Palili*. The Canadian Lake and Ocean Navigation Company has a fleet of 'turret' ships consisting of the *Turret Crown*, *Turret Chief* and the *Scottish Hero*. The Canadian Lake Transportation Company and the Merchant Mutual Line, both of Toronto, have fleets of large carrying capacity. The vessels of the former are the *Arabian*, *Corunna*, *Nevada*, *Kenora*, *Regina* and *Tagona*; and those of the latter, the *A. E. Ames*, *J. H. Plummer*, *H. M. Pellatt*, *Mapleton*, *Beaverton* and *Saskatoon*.

The Canadian Interlake Line is a younger company, organized early in 1912. During that year it ran a fleet of modern steel 'bulk and package' freighters consisting of the *McKinstry*, *Acadian*, *Renvoyle*, *Calgarian*, *Hamiltonian*, and *Fordonian*. In December 1912 the Canada Interlake Line was organized to absorb the interests of the Canadian Interlake Line and seven other vessels were purchased. The whole fleet has a capacity of 1,662,500 bushels of wheat.

The various lake and river lines, both freight and passenger, organized themselves in 1903 into the Dominion Marine Association for the purpose of furthering their common interests. In that year the lake carriers secured from the Dominion government the abolition of canal tolls and steamship inspection fees, and certain amendments to the customs regulations. The organization includes practically all the shipping between Montreal and the head of the Lakes, aggregating approximately 200,000 net registered tons. It resists all encroachment on the resources of the Great Lakes system for power development or other purposes detrimental to navigation interests, and encourages the improvement of Canada's great inland waterway.

VII

MARITIME AND MINOR INLAND SHIPPING

Atlantic Coast Shipping

THE Atlantic provinces have always been noted for their shipping, their fishing and their hardy fishermen. Under the troubled French régime, however, these provinces never thrived, and the population was small. For a brief period each year the coast swarmed with fishermen from the mother country who came ashore to cure their catch, but these always returned to France at the end of the fishing season. After the British acquired Acadia in 1713 there was little improvement for many years. Colonial officials, in 1749, in answering a number of questions put to them by the British Board of Trade, stated that the small trade of the country was entirely in the hands of the French. 'It consists,' they said, 'chiefly in fish, which is more plentiful here than on any other coast in America. They have likewise some furs and cattle, but whatever products or merchandise the French have to dispose of are transported by them either to Cape Breton, Quebec or directly to France.' In commenting on the backwardness of the colony they did not, however, overlook one source of potential wealth that for many years was to furnish one of the chief commodities of commerce. They noted carefully the large supply of excellent timber and pointed out how useful it would be for the navy. Yet, in concluding, they were forced to repeat that the fishing trade seemed most capable of development.

After the conquest of Canada a small number of British settlers went to Nova Scotia. In Queen's County, where an early British settlement was made, it is said that the colonists set about building vessels as soon as they were settled, and by 1765 had seventeen fishing schooners. The War of the American Revolution was, in one way at least, a benefit to Nova Scotia, because the inhabitants of the province added to the number of their vessels by the capture of French and American craft. But the great revival of the Atlantic

provinces came after the close of the American Revolution in 1783, when loyalists flocked in by thousands to find new homes for themselves. Many settled in Nova Scotia as it is known to-day, but the largest settlements were along the St John River in that part of Nova Scotia which, in 1784, was made a new province under the name of New Brunswick.

The shipping of the Maritime Provinces was engaged chiefly in the timber trade with Great Britain, in the West Indian trade, in the fisheries and in the coasting trade. A trade of considerable dimensions was also carried on with Newfoundland, the inhabitants of which purchased their fishing boats largely from builders in Nova Scotia and New Brunswick. In the early part of the nineteenth century considerable quantities of flour and of bread in barrels were imported from Boston and other United States ports, but the imposition of a duty of 5s. a barrel on these commodities, together with the increasing agricultural production of the provinces themselves, militated against the extension of this trade, and by 1830 it was on the decline. The trade in foodstuffs was indeed but a symptom of the neglect the inhabitants exhibited towards agriculture owing to the rich resources they possessed in the fisheries and the forests. The shipping of timber of various kinds, especially squared timber, to Britain provided employment for many vessels. The timber trade with Britain and also with the West Indies soon became one of the most flourishing in the Maritime Provinces, and continued to increase in volume until the last quarter of the past century, when the exhaustion of the supply began to make itself felt. New Brunswick sent out the greatest quantities, chief among its timber-exporting ports being St John, St Andrews, Moncton, Bathurst, Richibucto and the Miramichi ports.

After 1825 the merchant marine of the Maritime Provinces increased rapidly as a result of the reform accomplished by Huskisson, whereby colonial ships were permitted to trade with foreign countries who returned the favour. This privilege was granted solely to ' free ' ports, of which Halifax was the only one in Nova Scotia. In 1828 Pictou made strong representations to the British government to be given

the standing of a free port, but before the petition could reach Britain both it and Sydney were put on this footing. The first ship to arrive in Pictou under the new system was the schooner *Lovely Hope* from Boston, with a cargo of flour and corn. To the inhabitants this event seemed the forerunner of an era of unprecedented prosperity, and one enthusiast went so far as to declare that one day the governor-general of India would travel on Pictou iron paid for by direct importation of East India goods into Pictou harbour.

A number of flourishing ports grew up along the coast of Nova Scotia and New Brunswick, principal among which were Halifax, with its splendid harbour, and St John, which had tributary to it the whole forest wealth of the country along the St John River. In 1795 St John had a tonnage of only 4000 tons, in 1824 it had 16,000, but by 1839 this had increased to more than 85,000. The inward-bound vessels in 1824 numbered 432, while those clearing outward totalled 417. The towns on the Miramichi River did a large timber trade, as did also Charlottetown in Prince Edward Island. All the Atlantic ports of Nova Scotia had large fishing fleets, and those in the southern portion of the province carried on a flourishing trade with the West Indies, exporting lumber, fish and foodstuffs, and importing sugar, rum, molasses and fruits. Liverpool was one of the principal ports trading with the West Indies, and by 1828 had between sixty and seventy brigs and schooners engaged in this trade and in the fisheries. At about the same time Shelburne, whose shipping nearly equalled that of Halifax, had almost three hundred sail of all sorts employed in the West India trade and in the whale and cod fisheries. In 1829 Lunenburg had upwards of one hundred vessels engaged in the coasting and foreign trade and in fishing, while by 1838 it boasted seventeen square-rigged craft. Yarmouth was another port that had many vessels sailing to the West Indies, Newfoundland and the United States and to other Nova Scotian ports. On the Bay of Fundy, St John, Digby and Annapolis were the most flourishing centres of maritime activity.

Regular communication on the Bay of Fundy between

St John, Digby and Annapolis had been established soon after the coming of the loyalists. The first two vessels on the route were the *Sally* and the *Mary Ann*, both under 100 tons, each of which carried mail, passengers and freight. After the close of the War of 1812 the sloop *Hairm* also sailed between Digby and St John.

The first steamboat in the Maritime Provinces was the *General Smythe*, a paddle-wheel boat that in 1816 made a round trip each week on the St John River between St John and Fredericton. The *General Smythe* was owned by a partnership of St John and Fredericton men, at the head of which was John Ward, a loyalist and a member of the provincial assembly. She was purchased later by James Whitney, whose name is permanently identified with early steam navigation on the Bay of Fundy. In 1826 her machinery was placed in the *St John*, the first steamboat to cross the Bay of Fundy—a small schooner-rigged vessel 89 feet long and of 88 tons burden. Her route was from St John to Digby and Annapolis. When she first entered Digby Harbour the novelty of the event created quite a stir and the Court of Common Pleas, which was in session there, adjourned for an hour to inspect her. The *Henrietta*, a 50 horse-power boat, was built by James Whitney and placed on this route in 1831. Other early steamboats in the same service were the *Maid of the Mist*, *Nova Scotian*, *Gazelle* and *Royal Tar*. The *Royal Tar* was the first steamboat to ply between St John, Digby, Annapolis and Boston. She was burned in Penobscot Bay in 1836 with the loss of thirty-two lives.

St John, New Brunswick, is one of the principal ports of Canada, and, in addition to being a fine winter ocean port, is the starting-point for a number of coasting steamers and the terminus for the steamers that ply on the River St John. The Eastern Steamship Company runs boats between St John and Boston, while between the former port and Yarmouth a service is maintained by the South Shore Line and also by the Insular Steam Packet Company.

The Dominion Atlantic Railway Steamship Company[1]

[1] Now owned by the Canadian Pacific Railway.

is an important factor in the coast shipping of the Maritime Provinces. Between Yarmouth and Boston it runs two fine nineteen-knot twin-screw passenger steamers, the *Prince Arthur* and the *Prince George*; between Digby and Boston, the *Boston*; and between St John and Digby, the *Yarmouth*. The company also owns the *Prince Albert*, which connects Wolfville, Kingsport and Parrsboro, at the entrance to the Basin of Minas.

The Pickford and Black, Ltd. has a service from Halifax to Summerside, Prince Edward Island, and to Aspey, Nova Scotia. The Plant Line steamers run from Halifax to Boston, from Port Hawkesbury, Nova Scotia, to Boston, and from Halifax to Charlottetown, Prince Edward Island, calling at Port Hawkesbury. The Red Cross Line has steamers running between Halifax and Boston and between Halifax and St John. Steamship connection between Halifax and the Gulf ports is maintained by the Quebec Steamship Company, which likewise runs the *Cascapedia*, of 1900 tons, between Montreal and Pictou, calling at Prince Edward Island ports and at Quebec. The steamship *Trinidad* of 2600 tons, belonging to the same company, runs between Quebec and New York, calling at Halifax. The Reid-Newfoundland Company has the staunch little steamer *Bruce* on the route between North Sydney and Port-aux-Basques, Newfoundland, and two new steamers, the *Invermore* and the *Lintrose*, launched in 1913. In 1911 the large cargo boats of the Dominion Iron and Steel Company transported 1,480,000 tons of coal from Sydney to various points on the Gulf of St Lawrence. The Black Diamond Steamship Line runs the *City of Sydney* and the *Morwenna*, two combined freight and passenger steamers, from Montreal to St John's, Newfoundland, calling at Quebec, Charlottetown, Summerside and Sydney. In addition to the lines already mentioned there are a large number of steamers plying from various ports on the coast of the Maritime Provinces to Atlantic coast ports of the United States, to Newfoundland, the Magdalen Islands and St Pierre and Miquelon.

The first steam vessel to enter a Prince Edward Island port was the tugboat *Richard Smith*, owned by the Albion

Mines Coal Company of Pictou, which carried a load of excursionists from Pictou to Charlottetown on August 5, 1830. The next year the *Royal William* called at Charlottetown on her way from Halifax to Quebec, but when the local merchants refused to take stock in the company that owned her the call was dropped. In 1832 the *Pocahontas* began a mail service between Charlottetown and Pictou, and from that time regular communication has been kept up with the mainland either by steam or sail vessels. A steamboat service was commenced in 1852 by the *Fairy Queen* and the *Westmoreland* between Summerside and Point du Chêne and between Charlottetown and Pictou. In 1863 the Prince Edward Island Steam Navigation Company was organized, and in 1864 began its operations with the *Heather Bell*, the *Princess of Wales* and the *St Lawrence* between Prince Edward Island and the New Brunswick and Nova Scotian ports on Northumberland Strait. The vessels of this company as well as those of the Charlottetown Steam Navigation Company—which include the *Empress*, a fine steel vessel—still ply on these routes.

During the winter months the ice makes it extremely difficult to keep navigation open in Northumberland Strait. When Prince Edward Island entered the Dominion in 1873 it was on condition that the federal government would provide a steam ferry service between the island and the mainland. The first steamer to be engaged on this service was an old vessel, the *Albert*, which ran from Georgetown, Prince Edward Island, to Pictou. As the *Albert* could not force her way through the ice in winter, she was replaced in 1876 by the *Northern Light*. Through a mistake in building the latter the forward part of her keel was below the water-line instead of above it as was intended, and consequently she proved a failure as an ice-breaker. She gave very good service, however, until 1888, when she was displaced by the *Stanley*, a powerful ice-breaker built on the Clyde. The *Stanley* is 208 feet long, has a gross tonnage of 914 tons and her engines are of 300 nominal horse-power. The *Minto* and the *Earl Grey* are two other Canadian government steamers engaged in this service. They are both splendid

British-built vessels of extra strong construction, and are employed along with the *Stanley* on the Charlottetown-Pictou and the Georgetown-Pictou routes. The *Minto* was built in Dundee, Scotland, in 1899. She is 225 feet long and is of 216 nominal horse-power. The *Earl Grey* was built in 1909 at Barrow-in-Furness by Vickers, Sons and Maxim, Ltd., and affords superb accommodation for passengers. She is 250 feet long and has exceeded her contract speed of seventeen knots an hour. These powerful steamers succeed, excepting under extraordinary conditions, in maintaining daily communication across Northumberland Strait. All these vessels, as well as the *Montcalm*, which is used as an ice-breaker on the St Lawrence River, make their way through the ice by running upon it and breaking it down by their sheer weight.

Minor Inland Shipping: Central Canada

Scattered throughout Canada are numerous small lakes and rivers that are adapted to navigation by vessels of light draught. These, although not of such wide national significance as the St Lawrence and the Great Lakes, are yet of no small local importance. The greater portion are in the newer and less known parts of the country such as New or Northern Ontario and the northern parts of the great Canadian West. When these districts are opened up by rail the small lakes in them become of great value in extending settlement further from the railway line than would otherwise be possible. These bodies of water are sometimes connected in chains, and, where such is the case, long stretches are available for navigation. As the country becomes more thickly settled and large centres of population grow up within convenient distance, the beauty of these water stretches makes them popular summer resorts. The Kawartha and Muskoka Lakes and the Lake of the Woods in Ontario, with the cool foliage of the trees on their banks and their beautiful little islands set in the bright sheen of their mirror-like surfaces, together with the fishing they afford, are outstanding examples of the attractive inland

lakes of Canada that draw tourists from all over the continent.

The Kawartha Lakes, which are included in the Trent Navigation system, afford in various sections about a six-foot navigation. When the works now under construction by the Dominion government are completed, navigation will be open in the Trent district from the Bay of Quinte to Lake Simcoe. The steamers of the Calcutt Line ply between Peterborough and Birdsalls, while the Trent Valley Navigation Company maintains a service between Coboconk and Lindsay and also between Lindsay, Bobcaygeon, Burleigh Falls and Lakefield. North and west of the Trent system are the Lake of Bays and the Muskoka Lakes, the largest of which are Muskoka, Rosseau and Joseph. This group, situated in the 'Highlands of Ontario,' has become one of the most famous summer resorts of Canada, and the shores of the lakes are dotted with summer cottages and summer hotels. The Muskoka Lakes Navigation Company operates a line of steamers on these lakes.

The discovery of silver in large quantities in the Cobalt district about ten years ago and the recent discovery of gold in the Porcupine district have caused a great influx of population into the northern part of the Province of Ontario, and consequently the navigation of Lake Timiskaming has assumed considerable importance. The chief line of steamers on this lake is the Lumsden Line, whose boats ply between New Liskeard, Haileybury, Ville Marie and Timiskaming.

That portion of New Ontario north and west of Lake Superior is studded with a vast number of small lakes, many of which can be navigated by steamers of small draught. Lake Nipigon, situated in the midst of a provincial forest, and fish and game preserve, is navigable for vessels of ten feet draught for a distance of seventy miles from the north end, where it is connected with the National Transcontinental Railway. On its waters are three steamers, carrying both passengers and freight. Lake Sturgeon, west of Lake Nipigon, is navigable for a distance of forty miles for vessels of six feet draught and has four steamers. Lac Seul, which is connected with the National Transcontinental Railway,

is navigable in an easterly and westerly direction for a distance of 180 miles by steamers of eight feet draught. There is only one steamer on this lake at the present time. On the Canadian Pacific Railway about 250 miles east of Winnipeg is Lake Wabigoon, which is navigable from Dryden for a distance of fifty miles for vessels of seven feet draught. It has five steamers, while on Eagle Lake, a short distance to the west, there are three. The latter lake is navigable for sixty miles by vessels of seven feet draught. About midway between Lake Wabigoon and Rainy Lake is Lake Manitou, which has two small steamers. Although navigable for only forty miles by vessels of six feet draught, it is important as the centre of a rich mining district.

Rainy Lake and the Lake of the Woods are perhaps the two best known lakes of New Ontario, a circumstance that is explained largely by the fact that their shores and the numerous islands in them make convenient summer resorts for the people of Western Canada. Rainy Lake, which is connected by the Rainy River with the Lake of the Woods, can accommodate steamers of seven feet draught for a distance of seventy-five miles. The Lake of the Woods is navigable, by vessels drawing not more than nine feet of water, from Kenora to the mouth of the Rainy River, a distance of eighty miles. There are no fewer than twenty-two steamers upon this lake, the largest of which is of 472 tons burden.

Minor Inland Shipping: Western and Northern Canada

In Manitoba, the Red River and Lakes Winnipeg, Winnipegosis and Manitoba, together with the Saskatchewan River, constitute important navigable waters. Before the advent of railways the upper Red River was navigated much more than at present, although the completion of the lock and dam at St Andrews now enables vessels to ascend as far as Winnipeg. Lake Winnipeg itself is navigable from its southern extremity to Nelson River at the north, a distance of three hundred miles, for vessels of ten feet draught.

Three passenger steamers, the largest of 883 tons burden, ply from Winnipeg to where the Red River empties into Lake Winnipeg.

The first steamer to navigate the Red River was the *Pioneer*, owned jointly by the Hudson's Bay Company and Messrs J. C. and H. C. Burbank and Company, of St Paul, Minnesota. The *Pioneer* was built in the United States and was carried in pieces to Georgetown on the Red River, where she was put together. She made her first trip in 1859. Two years afterwards the Hudson's Bay Company built the *International* of 133 tons, for the Red River route, and, later, the *Chief Commissioner* for the same service. The *Northcote*, also owned by the Hudson's Bay Company, began navigating the Saskatchewan about 1875. At the mouth of the river on Lake Winnipeg she made connection with a Hudson's Bay Company propeller.

Of recent years the fishing in the waters of Manitoba has been vigorously prosecuted, and there are consequently on Lake Winnipeg, as well as on the other larger lakes of the province, many fishing tugs and steamers belonging to various fish companies.

On Lake Manitoba there are five steamers, engaged chiefly in carrying lumber and gypsum. The lake is navigable, by vessels drawing five and a half feet of water, from its southern extremity to Gypsumville, a distance of one hundred and twenty-five miles. There are six steamers on Lake Winnipegosis, which can be navigated by vessels of seven feet draught for one hundred and twenty miles. Lumber and fish are the principal commodities transported.

The Saskatchewan River permits of navigation westward from Lake Winnipeg for a distance of fifteen hundred miles. For the first seven hundred miles from the lake to Prince Albert there are nine steamers, none of which draw more than three feet of water. From Prince Albert to Brazeau, a distance of eight hundred miles, where the river is navigable only for boats drawing twenty-two inches of water, there are three steamboats. The country through which the Saskatchewan flows is being rapidly settled, and consequently this river is likely to become a very important water highway.

There will undoubtedly be much greater traffic over the lakes of Manitoba as well as over the Saskatchewan River as soon as the Hudson Bay Railway is completed.

Few people realize the extent of the system of navigation afforded by the Mackenzie River and its tributary rivers and lakes. The river itself is navigable, for steamers having a draught of six feet, from its mouth on the Arctic Ocean to Great Slave Lake, a distance of one thousand and twenty-five miles. The distance on Great Slave Lake from the point where the Mackenzie River flows out to where the Slave River enters is one hundred miles. The Slave River is navigable for vessels drawing six feet of water for its whole length, a distance of three hundred and twenty-eight miles, except for a stretch of sixteen miles between Smith Landing and Fort Smith. Six steamers ply on it from the latter place, traversing also Great Slave Lake and running down the Mackenzie River. Lake Athabaska, a deep-water lake abounding in fish, is now navigated from Fort Chipewyan to Fond du Lac, a distance of one hundred and thirty miles, by steamers drawing seven feet of water, but vessels of much greater draught can be used. The Athabaska River, which flows into Lake Athabaska, is navigable by boats of three feet draught from its mouth to Fort McMurray, a distance of one hundred and eighty-seven miles. Four steamers, the largest of 360 tons, ply on this part of the river. Navigation is broken south of Fort McMurray by the Grand Rapids, but from that point for two hundred and fifty miles to the confluence of the Lesser Slave River there is a depth for vessels of twenty-three inches draught. Three steamers are engaged on this portion of the river. One steamboat does duty on Lesser Slave Lake and down the Lesser Slave River for forty miles, to which point a five-foot navigation is available. Since this river is an important link in the route to the rich agricultural regions of the Peace River district, it is being improved by the Dominion government from the Athabaska River to Lesser Slave Lake.

The Peace River itself, which flows into Lake Athabaska, is navigable from that lake as far as the Chutes, a distance of two hundred and seventy-two miles. The steamers on

Lake Athabaska, the lower Athabaska River and the upper Slave River navigate this portion of the Peace River. Beyond the Chutes the river is navigable to Hudsons Hope, a distance of six hundred and sixty miles, for vessels drawing three feet of water. There are now three steamers on this lower portion.

Pacific Coast Shipping

The first steam vessel to plough the waters of the North Pacific was the *Beaver*, a paddle-wheel steamer, owned by the Hudson's Bay Company. The *Beaver* was built in England in 1835, and her launching, at which William IV was present, was attended by thousands of cheering people. Although fitted with her machinery before leaving England, she was rigged as a brig and crossed the ocean under sail, arriving at her destination in British Columbia on March 19, 1836, after a voyage of nearly seven months' duration. On her arrival she commenced her life work collecting furs and carrying supplies to all the company's posts along the Pacific coast from Puget Sound to Alaska. In the course of her duties the *Beaver* carried James Douglas, the factor of the Hudson's Bay Company, to found Victoria in 1843, and it was the cannon of this famous old vessel that fired the first salute that ever re-echoed around the site of the capital of British Columbia. She continued in service until 1886, when she was wrecked on the rocks at the entrance to Vancouver Harbour.

There were few steamers on British Columbia coast waters until 1850, when some small steam vessels were built on the Columbia River. In 1852 the Hudson's Bay Company had another steamer, the *Otter*, of 220 tons burden, built in England for service in British Columbia. Six years later, in 1858, gold was discovered in the Cariboo district and the gold-seekers began to pour north up the Fraser River. The first vessel to steam up this river was the *Surprise*, and soon numerous steamers began to navigate the Fraser as far north as Yale, beyond which navigation is impossible on account of rocks and canyons. The opening up of the northern portion of British Columbia was signalized in 1913 when the *B.X.*,

the first steamer to navigate the upper waters of the Fraser, steamed down the river from Tête Jaune Cache to Fort George.

The first steamer built in British Columbia was the *Governor Douglas*, a stern-wheeler constructed in 1859 to ply between Victoria and the Fraser River. Other steamers were the *Eliza Anderson*, *Seabird*, *Enterprise*, *Umatilla*, *Colonel Moody* and the *Labouchere*—the last a side-wheeler of 680 tons register. In 1865 the *Labouchere* was granted a subsidy to carry the mails from Victoria to San Francisco, but she was lost on her first trip.

After 1860 steam navigation developed rapidly. The discovery of gold in the Kootenay in 1886 increased the steamboat facilities on the Columbia River and on the southern inland lakes. Ten years later coast shipping received a still greater stimulus by the discovery of gold in the Klondike, and the steamers reaped a rich harvest in transporting prospectors and their supplies to Dyea and Skagway.

The remarkably rapid development of British Columbia in recent years has had the effect of stimulating both inland and coast shipping. The country south of the Canadian Pacific Railway main line has been extensively cut up into fruit farms, and steamboats have multiplied on the navigable rivers and the inland lakes. The largest of these lakes are Kootenay, Shuswap, Okanagan and the Arrow Lakes. Kootenay Lake is an expansion of Kootenay River, and is navigable for vessels of almost any draught except at the narrows near Proctor, where a depth of only eight feet is available. From Kootenay Landing to Proctor the Canadian Pacific Railway operates a number of car barges, each of which is towed by a powerful tug. The passenger traffic between Nelson and other points on the lake is carried by stern-wheel steamers ranging in draught from four and a half to five feet. Among these are the *Kuska-Nook*, of 1008 tons gross ; the *Moyie*, of 835 tons ; the *Kaslo*, of 765 tons ; and the little *Kokanee*, of 348 tons.

Shuswap Lake is the centre of a small navigation system consisting of the Spallumcheen River, Shuswap Lake, the South Thompson River and Kamloops Lake. Navigation

is possible from Enderby on the Spallumcheen River to Savona at the westerly end of Kamloops Lake, a distance of one hundred and fifty miles. On these waters there are a number of tugs engaged in towing logs, and two passenger steamers, each of 192 tons, running between Sicamous and Kamloops.

Okanagan Lake, situated in a splendid fruit-growing and agricultural district, has a large passenger and freight traffic, much of the latter being due to the saw-mills situated on its shores. Several fine steamers of from 554 to 1078 tons, owned by the Canadian Pacific Railway, ply between Okanagan Landing, Kelowna, Peachland, Summerland and Penticton.

The Arrow Lakes, formed by an expansion of the Columbia River, constitute the most extensive navigable waters in the interior of British Columbia. Navigation is possible from La Porte, forty miles north of Revelstoke, on the Columbia River, to Northport, in the State of Washington. Four passenger steamers run between Arrowhead and Robson, a distance of about one hundred and twenty-five miles. These vessels belong to the Canadian Pacific Railway and are the best of their class. They are all stern-wheel boats and are of 2000, 1117, 884 and 829 tons. The last vessel added to the fleet is the new steel steamer *Bonnington* of 2000 tons. Ice forms in the narrows between the upper and lower Arrow Lakes, but the steamers by shoving ahead of them heavily armoured barges keep navigation open. In addition to these boats the Canadian Pacific Railway runs car barges between Nakusp and Arrowhead.

There has been great activity in the coast shipping of British Columbia since the selection of Prince Rupert as the western terminus of the Grand Trunk Pacific Railway. The increased prosecution of the valuable fisheries in the coastal waters, and the development of the mining industry on Vancouver and Queen Charlotte Islands and on the coast of the mainland, have been responsible for much of this activity. British capital is becoming largely interested in the fisheries, and already there are several steam trawlers operating on the fishing grounds off the coast of British Columbia.

The two large railway companies, the Canadian Pacific and the Grand Trunk Pacific, are the main factors in the steamship service on the coast. Between Vancouver, Victoria and Seattle the former company conducts 'the triangular service' with the steamers *Princess Victoria*, *Princess Charlotte*, *Princess Adelaide*, *Princess Alice* and *Princess Patricia*, and has let contracts for two new ships (1913). The old *Charmer* was the company's first steamer between Vancouver and Victoria, and its first vessel to be put on the Puget Sound route was the *Princess Victoria*, which went into commission in 1905. Since that time the traffic, especially the tourist traffic, has grown rapidly and the steamers are often taxed to their utmost capacity. The Canadian Pacific Railway also has steamships sailing to all the important ports on Vancouver Island, Queen Charlotte Islands and the mainland, as well as to Skagway, Alaska, and the *Princess Maquinna*, built at Esquimalt in 1913, plies on the west coast of Vancouver Island. An important service is maintained from Vancouver to Prince Rupert and to Skagway by the splendid new steamers, the *Princess May*, *Princess Royal* and *Princess Sophia*.

The *Princess Sophia* is a new combination passenger and freight oil-burning steamer, which first saw service in 1912. She was built to Lloyd's highest class by Bow, McLachlan and Company, of Paisley, Scotland, on the widely spaced pillar system, which affords a large cargo space in the 'tween-decks and the hold. Her dimensions are: length, 245 feet; beam, 44 feet; depth, 18 feet. Her engine is of the triple-expansion type with cylinders of 22 inches, 37 inches and 60 inches in diameter, having a 36-inch stroke. Her speed when loaded is fourteen knots an hour. The cargo capacity of the *Princess Sophia* is 1500 tons and she is most completely equipped for handling freight. The forward hatch is 27·6 feet in length by 24 feet in width. Big double winches are placed at the hatches, one at the forward hatch being capable of lifting weights up to twenty tons. There are also a number of smaller winches for lifting weights up to five tons. The vessel has three decks. Forward, on the upper passenger deck is the finely appointed observation room, beautifully

finished in maple. The dining-room is aft on the deck below, and on either side of it there is a spacious saloon, with handsomely furnished state-rooms. The dining-room, which seats a hundred people, is furnished in mahogany with maple panels, while the smoking-room, placed by itself in a deck-house on the upper deck aft, is most comfortably appointed.

On the route from Vancouver to Victoria, Seattle, Alert Bay, Swanson Bay, Prince Rupert and Stewart on the Portland Canal, the Grand Trunk Pacific Railway runs the *Prince Rupert* and the *Prince George*. These are three-funnel, twin-screw, oil-burning steamers of the latest design, built at Wallsend-on-Tyne, each 320 feet long, gross tonnage 3380 tons, engines of 7000 indicated horse-power, speed under load 18½ knots. Both are equipped with wireless telegraphy and a complete ice-making and refrigerating plant. Passenger accommodation is afforded for 352 people besides a crew of 84 men. In connection with these two vessels the *Prince Albert* runs to Queen Charlotte Island ports, Port Simpson and Naas River points.

There are many other lines engaged in the coast service. Chief among these are: the Union Steamship Company, running the steamers *Cheslakee, Cariboo, Camosun, Cassiar, Capilano* and *Cowichan* to coast ports as far north as Prince Rupert and Stewart; the Northern Steamship Company, whose steamers *Cetriana* and *British Empire* ply between Vancouver and Prince Rupert; and the Boscowitz Steamship Company, with the steamers *Vadso* and *Venture* running between Vancouver, Prince Rupert and Stewart. The Pacific Coast Steamship Company's steamers are on the route between Victoria and San Francisco, and call at intermediate ports. In 1912 the Canadian Pacific Railway Company inaugurated a service between Vancouver and Tacoma via Seattle, with the steamship *Iroquois*. Besides these there are a number of smaller lines and many individual steamers plying between various ports on the mainland and the islands adjacent to the coast. The opening up of the country is causing a rapid increase in the number of steamers, and notwithstanding the remarkable growth already

made there is probably no part of Canada where there is so great scope for the development of shipping as on the Pacific coast.

VIII

SHIPBUILDING IN CANADA

SHIPBUILDING in Canada is an industry that in one sense has passed away, but in another is just beginning. Wooden shipbuilding is gone beyond recall; the building of steel vessels is only in its infancy. The ship's carpenter has departed for ever from the once busy shipyards of Quebec and the Maritime Provinces, but the Atlantic and Pacific ports, and the ports on the Great Lakes where iron and coal can be cheaply assembled, are beginning to resound with the clang of the ship foundry and the incessant din of the pneumatic riveters. The story of Canadian shipbuilding is thus both a retrospect and a prospect.

It was during the first seventy-five years of the nineteenth century that the building of wooden ships in Canada reached its largest proportions. The centres at which the industry flourished were Quebec city and various points in the Maritime Provinces, especially Moncton, Pictou, St John and the Miramichi ports, lying on rivers down which large quantities of timber could be floated. But timber was not the only requisite for establishing the industry upon a prosperous basis. Shipbuilding flourishes best under a seafaring people. In the early years of the past century the products of Canada's farms, mines and factories were not sufficient to provide the traffic necessary for the employment of a large ocean tonnage, and consequently did not hold out encouragement for the establishment of a shipbuilding industry on a large scale. But, while the wealth of the country's mines and lands was still hardly developed, the forest provided a readily available article of commerce, and the early inhabitants addressed themselves with a will to the initial task of clearing the land of its trees and selling the timber, the chief market for which lay across the Atlantic

Ocean in Great Britain. The forests of Canada, therefore, not only furnished the material from which ships were constructed, but also the goods which made the shipbuilding industry economically profitable. A large number of the ships built in Canada were used in the timber trade, and when, in the course of time, the shipbuilders increased the output of their yards beyond the needs of the Canadian timber merchants, few ships were sent to England for sale that did not carry cargoes of timber on their maiden voyages across the Atlantic.

Quebec as a Shipbuilding Centre

Quebec was the centre of both the wooden shipbuilding and the timber industries. In the early days of British rule the water-front of the ancient city was black with logs floated down the St Lawrence to be shipped to Britain ; and the yards where once the warships of the French kings were built rang with the industry of the French-Canadian shipwrights as they fashioned vessels for Britain's mercantile marine. Until 1787 only a few ships were built at Quebec, and these were of small tonnage, and it was not until about 1825 that a 400-ton or a 500-ton ship ceased to be looked upon as uncommon. In 1800 twenty-one Quebec-built ships, having a tonnage of 3769 tons, were entered on the register of the local custom-house, and from that time the industry made little progress till just before the outbreak of the War of 1812, when there was a marked quickening, fifty-four vessels with a tonnage of 13,691 being registered in 1811. The war had a bad effect on both the shipping and the shipbuilding of Canada. It was not till ten years after the war that the tonnage registered in any one year exceeded 3500 tons, and it was occasionally as low as 2000.

In 1824 the tonnage at Quebec was nearly 10,000 tons, almost triple what it had been in 1823 ; and in 1825 eighty-three ships were recorded, totalling 24,592 tons. From that time until 1838 the range was from 5000 to 10,000 tons annually, but in 1840 the tonnage had reached 26,561, the burden of the vessels built averaging over 400 tons.

However, the industry, peculiarly susceptible to commercial depressions under the system by which it was conducted, declined markedly as the result of the trade depression occurring at the time of the union of Upper and Lower Canada, and in 1842 the tonnage of the Quebec-built ships registered did not amount to half that of two years before. The British fiscal policy at this time also militated against the prosperity of shipbuilding in Quebec. The duty on timber imported into Britain from the Baltic countries, which had previously afforded ample protection to Canadian timber, was reduced; a duty imposed on American flour prevented that commodity from being exported as formerly in Canadian ships by way of the St Lawrence; and, to make matters still worse, the reduction of the duty upon American flour imported into the West Indies practically destroyed the Canadian trade in that commodity with those islands. But, from a variety of unexpected conditions, new and vigorous life was given to Canadian shipbuilding. Gold had been discovered in California and in Australia, and in the late forties and early fifties the rush of gold-seekers to these places created an unprecedented demand for fast-sailing vessels. The outbreak of the Crimean War gave employment to colonial vessels as transport ships, and the conclusion with the United States of an agreement for reciprocal free trade opened up a new market for the Quebec builders. In 1852 there were twenty-five shipbuilding establishments in the ancient city and eight floating-docks, and in the following year eighty-nine vessels having a tonnage exceeding 54,000 tons were registered. In the summer of 1855 fully fifty large ships were launched. The industry then gave employment to about five thousand men, who, together with their families, constituted about half the population of Quebec, and of Lévis on the opposite shore of the St Lawrence.

From this prosperous period onward the shipbuilding industry in Quebec reflected the ups and downs of trade and commerce, reaching its lowest ebb in 1859 after the depression of 1857-58, when only a little over 14,000 tons of shipping were registered. As the period of reciprocal trade with the

United States was drawing to a close, the builders put forth every effort to finish a large number of ships in time to sell them in the American markets free of duty, and, consequently, we find that in 1864 the shipyards of Quebec launched sixty ships, the largest of them being in excess of 1600 tons burden. The following year a hundred and five Quebec-built ships, representing a tonnage of 59,333 tons, were registered. From that date the industry slowly declined. The abrogation of the reciprocity agreement and, above all, the competition of iron and steel hulled vessels had their effect, and to-day the once thriving industry at Quebec is no more than a record on the page of history.

This record, however, is not devoid of interest. There is the story of the struggle to secure for Canadian-built ships the rating at Lloyd's which was their due. Colonial-built ships were not popular in England, principally because they were not built of oak. Canadian shipbuilders endeavoured to cater to the English demand, and for a while built a number of vessels of Canadian oak, but this wood was far inferior to the English oak, being affected with dry rot after being in use for a comparatively few years. The builders were therefore compelled to return to the use of tamarac, or hackmatac as it was then often called. This wood, although strong, was much lighter than oak, and ships built of it, on account of their buoyancy, could carry heavier cargoes than those of the same dimensions built of oak. It was a soft wood, nevertheless, and there was a long and tiresome period of waiting before the builders of Quebec and of the Maritime Provinces could secure due recognition for their vessels by the insurance underwriters. At the outset Lloyd's would grant only a seven-year-old class, when ships built of English oak were classed A 1 for twelve years. Tamarac ships have been found to be sound after forty years of service, but they usually were fit for service for but little over twenty years. The shipbuilders of Quebec strove energetically to improve the construction of their vessels in order to secure a higher rating and higher prices. By degrees these efforts were recognized by Lloyd's. If hardwood bolts were used in the construction an extra year

was added to the time during which the vessel would be classed as A 1, and another year was added for 'salting on the stocks.' The underwriters also agreed to allow still another year if vessels were built under cover, but no Canadian vessel secured this rating. One ship was being built under cover in the Baldwin shipyard, when fire destroyed both shed and ship. Strength was added in many instances by the use of double diagonal ceilings, although no higher rating was given to vessels having this improvement.

In view of the fact that ships were being built so extensively at Quebec, Lloyd's, in 1852, sent out Thomas Menzies as a special surveyor. By paying a fee of twenty-five cents a ton the builder could have the surveyor supervise the construction of a vessel from the time her keel was laid till she was ready for launching. When built under such conditions a ship was entered on Lloyd's books as being 'built under special survey,' and a lower rate of insurance was allowed. The builder, too, could obtain a higher price for his vessels if they were constructed under the practised eye of the experienced surveyor. Under this system the quality of Canadian-built vessels was much improved and their reputation was greatly enhanced.

Many ships that won fame for their beauty and speed were turned out of the Quebec shipyards. After the arrival of Lloyd's surveyor the building of clipper ships began. It was in this type that square-rigged vessels attained their highest development. With sharp lines and a long overhanging prow, they appeared under full sail as graceful as birds in motion. They were first built in Baltimore, Maryland, about 1845, the demand for them being occasioned by the need of large, fast ships to engage in the India and China trade, and also to compete with steamships, which were then beginning to displace sailing vessels on the North Atlantic. At Quebec Pierre Brunelle was probably the most noted among the builders of beautifully designed and remarkably fast clipper ships. One of his ships, the *Brunelle*, attained a speed of fourteen knots an hour, and was claimed by her captain to be one of the fastest wooden sailing ships in the world. William Power, draughtsman for Allan

Gilmour and Company, was also distinguished for the fast vessels he designed, among the most renowned being the *Shooting Star* and the *Arthur the Great*.

Few of the builders, despite the favourable reputation their work enjoyed, were financially successful. This was because most of them worked on borrowed capital and their profits were eaten up by interest and commissions. The builder ordinarily paid five per cent to a broker for procuring a loan on which he was charged seven per cent interest. By the broker who sold the finished ship he was mulcted to the extent of four per cent on the selling price. Besides, a commission of two and a half per cent was paid for procuring freight for the voyage to Liverpool, where most of the Canadian-built ships were sold, and a like amount was paid for collecting the freight charges. Add to this the fact that a new vessel often lay in dock at Liverpool for months before she could be sold, and it will readily be understood why most of the Quebec shipbuilders were poor men.

Shipbuilding, too, is an industry reflecting in a marked degree the varying fortunes of the shipping business, and unless builders are in good financial condition they are likely to become bankrupt in the lean years that usually follow the fat ones. This characteristic of the industry was well illustrated in the events of 1854, when the business was on the crest of a wave of shipping activity following the discovery of gold in Australia and California. Prices, which usually were about £10 a ton, rose as high as £12, and every one hastened to borrow capital to meet the demand for ships, which the facilities of the existing shipyards could not supply. The *Ocean Monarch*, a vessel of 1887 tons, built by Baldwin and Dinning, sold on the stocks for $53 a ton, giving her builders a reputed profit of $20,000. But the reaction was close at hand. Before the close of the year the prices had fallen to £7 a ton, and the failure of W. Edward Oliver of Liverpool, who dealt largely in Quebec-built ships, added to the severity of the depression, which ruined many of the builders.

Later on, in the sixties, when wooden shipbuilding was

just passing its zenith, greater stability was given to the business by Ross and Company, a firm of capitalists who advanced money to the shipbuilders. This company, instead of allowing new ships to lie idle in Liverpool during a slack market, fitted them out themselves for trading with the Orient, and ran them at a profit until such time as a profitable sale could be made. Not only did this eliminate much of the risk inherent in the business, but it also tended to improve the quality of the ships built.

The Maritime Provinces

The system of throwing ships together for a quick sale was injurious to the reputation of vessels built in the Maritime Provinces, where there was also great activity in shipbuilding. Those from Prince Edward Island and Pictou, Nova Scotia, had in this way acquired a most unenviable reputation prior to 1840. Between 1840 and 1850, however, the practice was changed, and the same men who built the vessels owned them and sailed them. Shares in ships were bought by the citizens of ports, and it was not an uncommon thing for small villages to own several vessels. The principal trade was, of course, in timber with Great Britain, although a flourishing trade was also carried on with the West Indies. In the latter half of the nineteenth century maritime industry began to broaden out, and ships hailing from Nova Scotia and New Brunswick were to be found in all parts of the world. In 1865, 294 vessels, aggregating over 56,000 tons and worth nearly $2,500,000, were built in Nova Scotia, while in New Brunswick in the same year 148 new vessels were launched representing a tonnage of more than 65,000 tons. By 1871, however, the competition of iron and steel vessels was being felt, and in that year Nova Scotia launched only 146 vessels, having a tonnage of 44,307 tons, and New Brunswick's quota was represented by 108 vessels with a total tonnage of 33,355 tons.

At practically all the seaports of the Maritime Provinces there was abundant timber suitable for building ships. Reporting upon the resources of Nova Scotia to the Board

of Trade in 1721, colonial officials state, in the quaint manner of those times, that in Nova Scotia 'there are to be had as good masts as any in all America in great plenty. Pitch, tar, rozin and turpentine may be had in all parts of the country.' When surveys were made for the first settlers the government did not forget the existence of these forest resources and reserved some of the choice areas of timber to supply the navy.

In Nova Scotia the principal shipbuilding ports were Digby, Yarmouth, Liverpool, Lunenburg, Halifax and Pictou. Many of the ships constructed at Digby were for St John merchants. Yarmouth took a leading place in shipbuilding and shipping circles from the earliest times. Its people were actively engaged in fishing and previous to 1800 had built numerous small vessels for the fishing and coasting service. But, with the advent of the nineteenth century, the growing foreign trade made a larger type of vessel necessary.

Among the early master-builders constructing these vessels were Jacob Tooker, Bartlett Gardner and James, John and William Jenkins. In 1817 Bartlett Gardner built the brig *Acadia*, of 200 tons, which was said to be the handsomest brig that had been built in Yarmouth County up to that time. Many of Gardner's sons and grandsons followed the trade of shipbuilding. Anthony Landers, an Englishman who came to Yarmouth in 1808, for over twenty years took a leading part in shipping and in shipbuilding. Among his best known ships were: the *Thales* and the *Ugonia*, each of 260 tons; the *Thetis*, of 300 tons; the barque *Dove* and the brig *Rhoda*, each of 275 tons.

Liverpool, Lunenburg, Halifax and such smaller places as Bridgewater and Mahone Bay were all busy shipbuilding centres by the middle of the nineteenth century. In 1860 there were twenty-two vessels, having a tonnage of 3138 tons, launched in the county of Lunenburg. One of the pioneer shipbuilders of this port was John Young, who built the brigs *Busy* and *Italia*, the brigantines *Chilian* and *Oddfellow*, and the schooners *Victor*, *Ripple* and *Friend*. Prominent among the early shipbuilders at Mahone Bay were

Nicolas Wendel, George Walker, Nathan Randall, William Bigelow and Benjamin Harrington.

The building of wooden ships in considerable numbers did not begin at New Glasgow till a little before 1840, but between that date and 1883 there was a total of about two hundred vessels launched there—as many as twelve vessels, ranging in size from 200 to 1500 tons burden, being on the stocks in a single year. The last sea-going wooden vessel of any size built at this port was launched in 1883.

Of all the Nova Scotian ports few were more noted for their shipbuilding than Pictou. The schooner *Ann*, built about 1788 or 1789, was probably the first vessel constructed there. The shipbuilding industry of the port was almost destroyed by the financial and industrial crisis of 1825-26. The period from 1835 to 1840 was one of considerable activity, and in one year as many as forty new vessels were registered as being built at Pictou and its outports. Up to 1841 Pictou ships were noted for both their good qualities and their defects ; but in this year most of the smaller builders became bankrupt, and from that time vessels were built for the most part by those who owned and sailed them. Under this system of shipbuilding a very superior class of vessel was constructed and the industry proved very profitable.

The name of Captain George Mackenzie, of Pictou, is permanently associated with this change for the better in the industry. Mackenzie, who was born in Halifax in 1798, was a man of resourceful character and had no mean mechanical skill. In 1821, in conjunction with John Reid, he built his first ship, the *James William*, a little schooner of 45 tons ; the two men constructed the whole vessel from the cutting down of the trees to the launching of the craft. Mackenzie next built the *Sally*, of 350 tons, and, later, several vessels of from 600 to 800 tons burden. In 1850 he launched the famous *Hamilton Campbell Kidston* of 1400 tons. This vessel on her arrival in Glasgow created quite a sensation, for she was the largest vessel that, up to that time, had sailed up the Clyde. Four years later he built the *Sebastopol* and the *Magna Charta*, the latter the biggest ship constructed up to that time in Nova Scotia. Captain

Mackenzie also built and sailed a number of other vessels, his last ship, the *County of Pictou*, being launched in 1865.

The timber resources of New Brunswick were valuable assets for the shipbuilders. Shipbuilding was carried on along both the Bay of Fundy and the Gulf coast, the points of greatest activity being St John and the Miramichi ports. Hackmatac was the wood almost always used, although occasionally spruce, birch, maple, ash, oak or elm were substituted, despite the fact that ships built of these woods were rated A 1 for only half the time of those built of hackmatac. The extent of the early shipbuilding may be judged from the fact that the citizens of St John represented in a memorial to Lord Hobart in 1804 that ninety-three square-rigged vessels and seventy-one sloops and schooners had been built in New Brunswick in the ten years following the settlement of the province in 1783. Most of these were employed in the trade with the West Indies.

The St John River was the scene of much activity in shipbuilding from the time of the settlement of the province. The first New Brunswick ship was constructed by Nehemiah Beckwith at Maugerville on this river. The vessel was named the *Lord Sheffield* and early in her career became the property of General Benedict Arnold. In 1824 St John was reported to have 16,000 tons of shipping, and by 1839 it owned 82,191 tons, while in the early seventies it ranked as the fourth port in the British Empire in respect of the ownership of vessels. Many wooden ships were also built at Fredericton, St Andrews, St Stephen and Campo Bello, in this section of the province. In 1853 a hundred and twenty-one vessels, representing 71,428 gross tons, were constructed in the whole province.

The 'Bend of the Peticodiac,' popularly known as the 'Bend,' where the city of Moncton now stands, was the scene of active shipbuilding operations in the days of wooden vessels. The first schooner was built here about 1827 by a person named Stanton, and a few years later Alexander Wright established a shipyard at Boundary Creek, twelve miles up the river from the 'Bend,' and here for many years a number of firms worked. William Haines, a native of

the United States, built vessels at the 'Bend,' beginning about 1840, and sailed them by proxy. His last vessel was the *Louisa*, commanded by his son, Captain Hiram Haines, and manned by a crew of young men from the vicinity of the 'Bend.' She made a voyage to the West Indies, where all on board were smitten with yellow fever, not one surviving.

The firm of G. and J. Salter began building ships at the 'Bend' in 1849. The Salters' first vessel, the barque *Gambia* of about 800 tons burden, was sent to England and sold there. The next year they built a clipper ship of about 500 tons, the *Jemsetgee Cursetgee*, a well-finished ship and very handsome in design. She was built for an East Indian prince, who selected her name and sent an elaborate wooden figure-head intended to represent the royal owner himself.

An incident occurred in 1853 which illustrates well the rugged seafaring qualities of the seamen of the Maritime Provinces of this period. The Salter firm had undertaken the building of a scow-like coal barge, 60 feet long, 20 feet wide and with 8 feet depth of hold. The most difficult problem in connection with the contract was how to navigate this unwieldy craft across the Atlantic, for the agreement stipulated that the vessel was to be delivered in England. But the Salters were equal to the occasion. They put temporary masts in the barge, rigged her like a schooner and loaded her with spruce deals for the English market. To find a captain and crew willing to risk their lives in crossing the Atlantic in such a craft was the next step. Captain James Walker, a retired sea-captain, who had abandoned his seafaring life and had settled with his wife and family on a fine farm near the 'Bend,' agreed to take charge of the vessel on her perilous voyage. Walker succeeded in getting together a crew, and on the day of their departure all their neighbours and friends gathered to say farewell, hardly expecting to see them alive again. But the unexpected happened. They had a favourable voyage across: so calm was the weather that the chips that had been left on the gunwales of the barge when the stanchions were put up to support her deck load were not even washed off by the sea.

The firm of G. and J. Salter finally went into liquidation,

largely as the result of their inability to collect the amount due them for the *Lady Russell*, a fine ship of about 1000 tons burden, which they sold in England for £10,000. Two other vessels, appropriately named the *Alarm* and the *Recruit*, were built, but they failed to restore the solvency of the firm. Contemporaneous with the Salter brothers as shipbuilders at Moncton were M. L. Harris and Malcolm Cochrane. Beginning about 1865, Archibald M^c^Kay also built a number of spruce ships at Moncton, among which were the *Lalla Rookh* and the *Alcedo*.

It was in the counties fronting on Northumberland Strait and the Gulf of St Lawrence, however, that the timber industry assumed the largest proportions, and it was along this portion of the coast that shipbuilding became one of the most important of industries. Dalhousie, Bathurst, the Miramichi ports and Restigouche were the chief shipbuilding centres. Practically all the shipping from this part of New Brunswick was engaged in the timber trade. The trade in fish and furs held precedence over all others until about 1815, when the trade in lumber and squared timber took the lead. After that date saw-mills and shipyards began to multiply. At Bathurst, prior to 1850, from five to ten merchant ships of the largest class were frequently on the stocks at one time, separated only by sufficient space to allow the workmen to pass between them. At Newcastle and Chatham there were a number of shipyards, and at the latter place a steam saw-mill owned by the Cunards, who also had a large shipbuilding establishment on the Kouchibouguac in Kent County. As early as 1825 the Miramichi was coming into prominence for its shipbuilding, and, when the great fire passed over it in that year, two partially completed ships were destroyed. The industry continued to grow and in 1839 twenty-six vessels, having a tonnage of nearly 10,000 tons, were built at the Miramichi ports.

The reciprocity agreement of 1855 between Canada and the United States had an important influence on shipbuilding in the Maritime Provinces. Under it the products of the forest were admitted free of duty into the United States, and by the time the treaty was abrogated in 1866

the best of the hackmatac, the finest of all soft woods for shipbuilding, had been cut down. Every stick of this kind of timber within easy reach of a shipping port was exported and, as one authority says, there was not enough hackmatac left to built a scow. The decline in the use of this wood for shipbuilding began about 1860, spruce being largely used in its place. The latter wood was found at its best along the Bay of Fundy, where the fertilizing effects of the Fundy fogs seemed to foster a larger growth and impart a greater strength of fibre. Under such conditions the ports on the bay had a considerable advantage over those on the Gulf of St Lawrence in so far as shipbuilding was concerned.

But by this time the increasing use of iron for shipbuilding purposes was sounding the knell of the Canadian industry. The *Rainbow*, the first iron-hulled ocean-going vessel, was launched at Liverpool, England, in 1838, and from that time iron gradually ousted wood from its place in shipbuilding. The *Great Britain*, an iron vessel which lay stranded for eleven months on the coast of Ireland in 1846-47 without serious damage, amply demonstrated the superiority of the metal hull, and underwriters soon evinced a decided preference for it. It was found too that iron ships, on account of their greater durability, were much cheaper in the long run than those built of wood. With suitable wood growing scarcer and dearer and with the strong competition of iron, and, later, of steel ships, Canadian builders found their businesses becoming more and more unprofitable, and by the early eighties most of them had engaged in more remunerative pursuits. To-day there is practically no wooden shipbuilding done in Canada.

There is every possibility, however, that an extensive steel shipbuilding industry will eventually develop. A number of steel ships have been built of recent years and existing dry-docks are being rapidly extended, or new ones built, on both sea-coasts and on the Great Lakes. Splendid opportunities for steel shipbuilding present themselves in Nova Scotia, where coal and iron are to be had in close proximity. The first steel vessel of any size constructed in

New Glasgow, which is in the heart of a coal and iron district, was a steamer of about 300 tons, built in 1893. Since that time several small steel craft have been built, and in 1909 a steel sailing vessel of 700 tons was launched. At Sydney, which is the hub of the iron and steel industry in Nova Scotia, plans are being drawn up for a large dry-dock and shipbuilding establishment by a strong company of which Sir Henry M. Pellatt is president and in which a large amount of British capital is invested. Extension of the dry-dock facilities at Halifax, where there is now a dry-dock having a usable length of 570 feet, is projected, and English capitalists have filed plans with the Dominion government for a huge dry-dock at St John to cost several millions of dollars. The Dominion government now has a graving-dock under construction at Quebec, where there is already a government dry-dock having a usable length of 600 feet.

Montreal has one of the most modern floating steel dry-docks in Canada, the 'Duke of Connaught,' which was dedicated with important ceremonies on November 18, 1912. It was moored at Maisonneuve in the basin prepared for it by the Montreal Harbour Commission after an exciting voyage across the Atlantic, lasting sixty-four days, in which it more than once broke away from the two powerful Dutch tugs that were towing it. It was built by Vickers, Sons and Maxim, Ltd., and is owned and operated in connection with the shipyard and repair plant of the Canadian Vickers, Ltd. The length of the dock over platforms is 600 feet, and over pontoons 550 feet 6 inches. It has a width of 135 feet over all and 100 feet clear width between roller fenders. It can accommodate a vessel of 27 feet 6 inches draught and has a lifting capacity of 25,000 tons. The construction of the dock is such as to make it suitable for lifting a modern battleship, the pontoon deck being specially stiffened to allow it to support a large portion of the weight of the vessel on side or bilge, as well as central, keels.

For a number of years large modern ships have been built on the Great Lakes for service on inland waters. At Toronto the Polson Shipbuilding Company, which has

turned out from its yards some fine vessels, has under construction a floating-dock of 300 feet capacity length. Perhaps the best known shipbuilding plant on the Great Lakes is that of the Collingwood Shipbuilding Company. At Collingwood there are two dry-docks having usable lengths of 515 and 570 feet respectively, while at Owen Sound there is a dock of 350 feet capacity length and another projected which will be able to accommodate vessels 600 feet long. Passing farther west to Sault Ste Marie, we find that plans have been approved for a dry-dock that will accommodate vessels up to 650 feet in length. At Port Arthur the Western Dry Dock and Shipbuilding Company has a dry-dock with a usable length of 679 feet—the largest on the Great Lakes. It is here that the *Hamiltonian* and the *Calgarian*, two bulk and package freighters, each of 1450 tons net register, were built for the Canadian Interlake Line, and it is here, too, that the big 385-foot passenger vessel, the *Noronic*, was built for the Northern Navigation Company.

During the past few years the rapid development of British Columbia has given quite an impetus to shipbuilding on the Pacific coast. Vancouver, Esquimalt and Prince Rupert are the ports where activity is greatest. At Esquimalt there is a government dry-dock having a usable length of 430 feet, while at Vancouver a floating-dock with a capacity length of 550 feet and a lifting capacity of 15,000 tons has been projected by the Vancouver Dry Dock Shipbuilding Company. The Grand Trunk Pacific Railway Company has under construction at Prince Rupert a still larger dock of the same type, with a length capacity of 600 feet and a lifting capacity of 20,000 tons. The present facilities for shipbuilding will be taxed to their utmost on the Pacific coast. British Columbia has immense deposits of coal and iron ore close to the ocean, and thus its ports have a decided advantage in steel shipbuilding over the Pacific ports farther south.

IX

OCEAN SHIPPING

WITH two oceans washing her shores, the Pacific on the West and the Atlantic on the East, Canada possesses a twofold ocean shipping. From her eastern coast vessels sail for the busy ports of Europe; while from the Pacific seaboard they take their leave for Australia, New Zealand, China, Japan and other countries of the Orient. There was little or no intercourse with the Pacific coast in the first half of the nineteenth century and few ships visited it, save those of sealers, whalers or adventurous explorers. Indeed, it was not till the Canadian Pacific Railway in 1885 opened up the great western hinterland and formed the last link in an all-British line of communication between Great Britain and her colonies in Asia, that Canadian shipping on the Pacific Ocean attracted the attention of the economic historian. The development of the central provinces and of British Columbia, and the construction of the Panama Canal to provide a shorter and a cheaper water route for Western Canadian products destined for Europe, have combined to make Canadian shipping on the Pacific Ocean scarcely less prominent than that on the Atlantic.

Beginnings of Atlantic Shipping

The Atlantic has always been the chief highway for Canada's ocean commerce. When there was but a fringe of settlement along the St Lawrence, the French colonists, surrounded by a wilderness peopled with savages, depended upon it for communication with the mother country. When the English came there was a considerable population in Canada, the colony was more self-sufficient and a flourishing Anglo-Saxon colony had grown up to the south. They had not, therefore, that sense of isolation experienced by the early French settlers at being separated from an older civilization, and they did not regard the Atlantic with the

same sentimental thankfulness for providing them with a means of reaching the Old World. Nevertheless the English colonists in Canada were by no means insensible to the value of water communication with the Old World. Population increased and spread itself over new and fertile areas, the resources of the country were developed, and the surplus products of the country multiplied apace. The market for these was chiefly in Great Britain, and the Atlantic thus continued to grow in importance as Canada's great commercial water highway, facilitating the exchange of the raw products of the colony for the finished articles of the homeland.

Notwithstanding the growth of trade between Canada and Great Britain, it was not until many years after British occupation—not, indeed, till the advent of steam in ocean commerce—that lines of vessels with regular sailings began to cross the Atlantic. A young country like Canada with a sparse population had but few people who wished, or could afford, to take the voyage across the Atlantic; and passenger traffic is mainly responsible for the establishment of lines of ocean vessels. Then, too, the irregularity of sailing vessels, whose movements depend entirely on the fickle wind, militated strongly against sailing on fixed dates, even if the volume of traffic had been large enough to warrant it. Moreover, three return trips a season from the St Lawrence to England were the most that could be expected of a sailing vessel under average conditions of wind and weather. We need not therefore be surprised that it was not until long after the middle of the last century, and the supremacy of steam over sail in the transatlantic service, that lines of vessels connecting Canada directly with the Old World were established.

The *Royal William*: First Atlantic Steamship

In proving the efficiency of steam for propelling ocean-going vessels Canada took a leading part. The first ship to cross the Atlantic, propelled all the way by steam, was a Canadian vessel, manned by a Canadian crew. This was

T. Grindlay

Prepared expressly fo

"nada and Its Provinces"

the *Royal William*, built in the yards of Campbell and Black at Quebec in 1831. The *Royal William* made her memorable voyage across the Atlantic in 1833, sailing from Pictou, Nova Scotia, on August 18 and arriving at London after a passage of about twenty days.[1] During the whole voyage she was propelled by steam generated by Pictou coal. As a memorial of this accomplishment there rests to-day in the corridor of the Library of Parliament at Ottawa a brass tablet bearing this inscription :

> In honour of the men by whose enterprise, courage and skill the *Royal William*, the first vessel to cross the Atlantic by steam power, was wholly constructed in Canada and navigated to England in 1833, the pioneer of those mighty fleets of ocean steamers by which passengers and merchandise of all nations are now conveyed on every sea throughout the world.

Although the first steamship to cross the Atlantic Ocean, the *Royal William* was not constructed for the transatlantic service, but for service between Quebec and Halifax. The people of Lower Canada, imbued with the same spirit which in 1867 resulted in Confederation, had long felt the need, both from a political and a commercial point of view, for a closer relationship with the Maritime Provinces. This relationship, it was thought, could best be brought about by the establishment of better facilities for communication, and in 1825 the government of Lower Canada passed an act offering a subsidy of £1500 currency ' to the first person or company that shall cause a steam vessel of not less than 500 tons burthen, to be built and regularly navigated between the ports of Quebec and Halifax, during four years.' This sum, however, was insufficient to tempt any one to incur the hazard of this new venture, so, in 1830, the subsidy was doubled. This had the desired effect. The next year the Quebec and Halifax Steam Navigation Company, with a capital of £16,000, was incorporated to establish steam

[1] Captain John McDougall to Robert Christie, August 10, 1853—Report of the secretary of state for Canada for 1894, p. 72. A memorandum in the records of the Quebec custom-house says : ' The *Royal William* arrived at Gravesend, 25 days passage from Pictou, N. S.'

navigation between the ports of Lower Canada and the Maritime Provinces. The company had a long list of incorporators, prominent among whom were Henry, Joseph and Samuel Cunard, the last of whom was soon to found one of the greatest of the Atlantic lines of steamships.

The company entered into a contract with John Saxton Campbell, a merchant, and George Black, a shipbuilder, to build the *Royal William*. She was designed by the foreman of the contractors' shipyard, James Goudie, a Canadian of Scottish parentage, who had learned his trade on the Clyde. Her keel was laid on September 2, 1830, in the yard at Cape Cove, above which stood the monument marking the spot where Wolfe fell. The launch, which took place on April 27 of the following year, was a gala event. Craft of all kinds gathered on the river around the shipyard, and on one of these, the steamer *Richelieu*, was the band of the Thirty-Second regiment. Lord Aylmer, the governor-in-chief of Canada, was there as the representative of royalty to grace the occasion with his presence. The ceremony of naming the vessel was performed by Lady Aylmer in the presence of an immense crowd. As the *Royal William* trembled on the ways and glided into her element a ringing cheer was sent up, while the cannon boomed a salute of welcome to Canada's first ocean-going steamship.

After the launching the *British America* towed the *Royal William* to Montreal, where she was fitted with her engines at Bennett and Henderson's foundry. Like all steam vessels of that time she was a side-wheeler. She had 160 feet length of keel, 28 feet breadth between the paddle boxes, 17 feet 9 inches depth of hold, and a tonnage of 1370 tons, builders' measurement, although her net registered burden was only 363 tons.[1] She was a three-masted vessel, with standing bowsprit, and was schooner-rigged. The under-deck cabin contained some fifty berths, besides a splendidly furnished parlour.

The *Royal William* left Quebec on August 24, 1831, on her first trip to Halifax, completing the voyage in six and a

[1] These are the dimensions of the vessel as given in her register in the records of the custom-house at Quebec.

half days, including two days' detention in the Miramichi River. The return trip was completed in nine days, from which four days must be deducted for stops at ports and for detention due to fogs. Three round trips were made during this season, on all of which the vessel was well patronized with respect to both cargo and passengers.

The next year was not such a prosperous one, however. Asiatic cholera, which was devastating Europe, made its appearance in Canada and thousands fell before it. Quebec especially suffered from the scourge, and the *Royal William*, coming from this port, was an object of aversion at every other port at which she attempted to call. In the Miramichi she was quarantined from June 19 to July 12; at Pictou she was met at the entrance to the harbour by an armed vessel and forbidden to dock; while at Halifax she was again quarantined. When released she returned to Quebec after an absence of fifty-three days. The management was forced to tie the vessel up for the remainder of the season, and thus suffered heavy financial loss. The company, which had borrowed £5000 on a mortgage, was unable to meet its obligations, and in the spring of 1833 the *Royal William* was sold by sheriff's sale to the mortgagees for the amount of the mortgage, £11,000 less than her first cost.

A new company consisting of six persons, of whom the majority had been shareholders in the original company, then purchased her. She was employed in towing and in the local excursion business for a time, and was finally sent to Boston, calling on the way at Gaspe, Pictou and Halifax. At Boston she was enthusiastically received by the citizens as the first British steamship to enter the harbour. Her owners, however, did not continue her on this route, but decided to send her to England for sale and fitted her out for the voyage to London.

This was the voyage that gave the *Royal William* a place in history. On August 5, 1833, she left Quebec for Pictou, where she was detained for several days, coaling, repairing her boilers and awaiting passengers from Prince Edward Island. On August 18, under the command of Captain John McDougall, she steamed out of Pictou Harbour, to

test the power of steam against the waves of the Atlantic. On board were seven passengers and a miscellaneous and interesting cargo consisting of 254 chaldrons of coal, six spars, a case of stuffed birds, some household furniture and a harp. She was very deeply laden with coal, deeper, in fact, said Captain McDougall later, than he would ever again care to have her in crossing the Atlantic. On reaching the Grand Banks of Newfoundland she experienced a terrific gale, which disabled one of her engines and caused the engineer to report that the vessel was sinking. She weathered the storm safely, but was compelled to proceed for several days with only one engine working. The captain put into Cowes to clean the boilers, which had been very leaky during the voyage, and then proceeded to London. Ten days after her arrival there she was sold for £10,000 and chartered to the Portuguese government to transport troops for Dom Pedro's service. Captain McDougall was continued in command, and in the autumn of 1833 sailed her to Lisbon, where she was unsuccessfully offered for sale to the Portuguese government. In 1834, after making a trip to Oporto, Lisbon and Cadiz, she was sold to the Spanish government and converted into a war steamer, the first that Spain ever owned, her name being changed to the *Ysabel Segunda*. She was then employed against Don Carlos on the north coast of Spain, where she had the added distinction of being the first steam war vessel to fire a shot in action. The event took place in the Bay of San Sebastian in 1836 during the action on land between the British Legion under De Lacy Evans and the Carlists, who were well entrenched behind a series of field-works. The Carlist sharpshooters, who, protected by these works, were fast picking off the officers and men of the Eighth Highlanders, were dislodged and dispersed by the guns of the *Ysabel Segunda*. She was employed in the coast-guard service in Atlantic waters and, later, in the Mediterranean, until 1840, when she was sent to Bordeaux, France, to have her hull repaired. It was then found that her timbers were hopelessly rotten, and she was converted into a hulk, and a new vessel was built to receive her engines. The new war vessel into which her engines were transferred,

and which received the same name, was wrecked in 1860 in a fierce storm off the coast of Algeria. Thus, with her hull rotting in Bordeaux harbour and her engines sunk in the shifting sands of the Mediterranean, the *Royal William*, the first ship to cross the Atlantic by steam power and the first steam war vessel to fire a shot against an enemy, ended her varied career.

The Cunard Line

But a few years intervened between the time when the *Royal William* made her memorable voyage and the inception of a regular line of transatlantic steamships. Had one been strolling about the docks at Halifax when the *Royal William* was in port, one might have noticed an alert, businesslike person examining her minutely, questioning her officers closely about her engines, her sea-going qualities, her speed and her coal consumption, and carefully noting down the information he wished to preserve. This inquirer was Samuel Cunard, who already owned several sailing vessels, and who, with the penetrating vision of the far-seeing business man, recognized that steam was to replace sail on the ocean and was preparing for the change. He had become possessed of the idea that a line of transatlantic steamships sailing from either side on fixed dates was feasible, and was securing data for the working out of that idea.

He was of Quaker stock, his ancestors having emigrated from Wales to America in the seventeenth century. His father, Abraham Cunard, was a merchant in Philadelphia. When the American colonies threw off their allegiance to Great Britain, the Cunards went to Halifax, where Samuel was born in 1787. As a youth Samuel began his business career in a merchant's office. In the course of time he became a prosperous merchant and owned a number of whaling and other ships sailing out of Halifax. He was also the agent in Halifax for the East India Company, and ran a line of sailing vessels for carrying the mails between Halifax, Newfoundland, Boston and Bermuda. He was a man of most remarkable

natural endowments. What struck an observer most in him was his alertness of manner and his broad intelligence. He was a keen student of men and affairs, and possessed in a remarkable degree the rare faculty of influencing and leading others. His partners always left to him the business of dealing with the government in regard to mail subsidies, and he never failed them. His wonderful power of organization and his steadfastness of purpose are attested by the reputation the Cunard Line has won for punctuality and safety, and by its final triumph over all competitors.

In the early thirties Cunard's plans were too large for his means. He could see the great possibilities in a transatlantic steam line, but the project required too much capital to be financed in America. He therefore went to England and presented himself and his plans to Melvill, secretary of the East India Company, who introduced him to Robert Napier, the renowned marine engineer. Napier gave him an introduction to two other Scotsmen, George Burns and David MacIver, who ran rival steamship lines between Glasgow and Liverpool. He was not long in persuading Burns of the feasibility of his scheme and the profit in it. MacIver was harder to convince, but, thanks to Cunard's wonderful power over men, he was won over and entered heartily into the plans.

This was the first stage in the evolution of the Cunard Company. The next was to secure a subsidy from the British government for carrying the mails. In this Cunard derived some assistance from a peculiar coincidence. The Honourable Joseph Howe and Judge Haliburton, two men of great influence in the Maritime Provinces, were proceeding to London in Her Majesty's brig *Tyrian* when the steamship *Sirius*, of the British Queen Steam Navigation Company, going to London from New York on her first return transatlantic voyage, caught up to them, took on their mails and was soon but a streak of smoke on the eastern horizon. They were much impressed by the speed of the steam vessel, and on arriving in England at once began negotiating with the Great Western Steamship Company of Bristol and with the British government for a steam mail service to Canada.

SIR SAMUEL CUNARD, BART.

In the meantime Cunard had met them and explained his project. Largely as a result of their representations, the Admiralty, in October 1838, advertised for tenders for carrying the mails between Liverpool, and Halifax and Boston. When the tenders were opened, the Great Western Steamship Company, which had foreseen no serious opposition, found that they had reckoned without Cunard. The latter's tender was accepted and he was given a seven-years contract by the Admiralty for the first steamship mail service to America.

A company known as the British and North American Royal Mail Steam-Packet Company was formed with a subscribed capital of £270,000 sterling, and the work of building the vessels and organizing the service was begun. George Burns looked after the interests of the company in Glasgow; David MacIver, in Liverpool; and Cunard's sons, in Halifax. Cunard himself was stationed in London, where negotiations with the government over subsidies took place. The terms of the contract originally proposed by the government called for a steam service between Liverpool, and Halifax and Boston, twice a month for eight months in the year and once a month in winter. A subsidiary service was also to be maintained between Pictou and Quebec during the season of navigation. The company was to receive an annual subsidy of £60,000. The original terms proposed stipulated for the building of only three steamships, but the contract as signed by the company called for the building of four vessels and also stipulated that fixed days of departure and arrival should be adhered to. In consideration of these alterations in the terms the company was granted an annual subsidy of £81,000.

Contracts were at once let for the construction on the Clyde of four wooden side-wheel steamships, all quite similar in size and equipment. These were: the *Britannia*, built by R. Duncan; the *Columbia*, by Robert Steele; the *Caledonia*, by C. Wood; and the *Acadia*, by John Wood. They were built by different builders in order that they might all be ready for service as soon as possible. Compare these first Atlantic liners with the huge floating palaces

used to-day: The *Britannia* was only 207 feet long by 34 feet 4 inches wide, with a moulded depth of 24 feet 4 inches, and a gross tonnage of 1154 tons. Her engines, which were of the side-lever type, were built by Robert Napier and generated about 740 indicated horse-power, requiring a consumption of 4·7 pounds of coal per indicated horse-power per hour. The total daily coal consumption was 38 tons and the average speed was about 8½ knots an hour. She was capable of carrying 225 tons of cargo. In accordance with an agreement with the British government all these vessels were adapted for carrying troops and munitions of war. There was accommodation for only 115 cabin passengers and none for steerage passengers. The comforts provided were exceedingly primitive.

The first Cunard steamship to sail across the Atlantic was the little *Unicorn*, which reached Boston on June 2, 1840. This vessel had formerly plied on the Glasgow-Liverpool route, and was sent out to Canada to establish a service in connection with the Atlantic vessels between Quebec and Pictou, on which route she plied for several years.

Of the four Cunard vessels built especially for the Atlantic service the first to cross was the *Britannia*, which sailed from Liverpool to Halifax and Boston on July 4, 1840, reaching the former port in twelve days and ten hours, and the latter in fourteen days and eight hours. At Boston the arrival of the vessel was hailed with great joy, and Samuel Cunard, who came out in her, was enthusiastically received. It is said that he received eighteen hundred invitations to dinner during the first twenty-four hours after his arrival in the city. Four years later, when the *Britannia* was ice-bound in Boston harbour, the people of the city showed their appreciation of the Cunard service by cutting a channel seven miles long and a hundred feet wide at their own expense in order to liberate her.

Business expanded rapidly, and after three years the Cunards found it necessary to add to the number of their ships. The *Columbia*, which was wrecked on Cape Sable, was replaced in 1843 by the *Hibernia*, a vessel 219 feet long

with a gross tonnage of 1422 tons and about half a knot faster than the first vessels built. Two years later the *Cambria*, a sister ship, was added. In speed she was the fastest of all the fleet, averaging over 9½ knots an hour and earning the title of the '*Flying Cambria*.'

In 1847, when the time arrived for the renewal of the mail contract with the British government, the increasing traffic with America caused a demand for a weekly service. The company was given an annual subsidy of £173,340. Its steamers were to leave Liverpool every Saturday and were to run alternately to New York direct and to Halifax and Boston. Although the company had now one more steamship than it had in 1840, it was found necessary, both on account of the growing traffic and also because of the more frequent service, to build four new ships—the *Europa*, the *Canada*, the *America* and the *Niagara*. They were very much alike in size and type, the *Canada* being 251 feet long, of 1825 gross tons and having engines of 2000 indicated horse-power, which gave her an average speed of about 10½ knots an hour. In 1850 two sister ships, the *Asia* and the *Africa*, each having a speed of about 12½ knots, were added to the fleet; and in 1852 the *Arabia*, a vessel 285 feet long, of 2402 gross tons and with an average speed of 13 knots, appeared upon the scene, largely for the purpose of wresting the laurels for speed from the Collins Line, an American company whose ships had beaten the *Asia* and the *Africa*.

With the *Arabia* ends the first era in the development of the ships built by the Cunards. She was the last vessel they built of wood, their next ship, the *Persia*, being constructed of iron. The latter was launched in 1855, long after iron hulls had been proved superior to wooden ones. This, however, was characteristic of the Cunards; they were always content to let others take the risk of making experiments. They were equally slow in adopting the screw propeller. Their last paddle-wheel steamship, the *Scotia*, was built in 1862, although the success of the second *Rattler*, built in 1851, led to the adoption of the screw propeller in the British navy. This ultra-conservatism may have been

the cause of their being outdone at times by other steamship lines, but it has contributed to the length of the company's life and to the safety of its passengers.

After 1867 the Cunard Line falls almost outside of the history of Canadian transatlantic shipping, for in that year its ships ceased to call at Halifax, except when compelled to through stress of weather. The reasons for this were given by Cunard before a British parliamentary committee: thirty passengers landed at Boston and New York for one at Halifax; and the amount of cargo for Halifax was insignificant when compared with that for the United States ports.[1] The change was determined upon after the conclusion of a new mail contract with the British government in 1868, whereby the company was to receive an annual subsidy of £70,000 for a direct weekly service to New York. The company now has the *Ultonia*, the *Ascania* and the *Ausonia* on a fortnightly passenger and freight service from Southampton to Montreal and Quebec in summer and to Portland, Maine, in winter, and two new one-class-cabin boats, the *Andania* and the *Alaunia*, each of 13,000 tons, 540 feet long and 64 feet wide, with accommodation for 520 cabin

[1] Cunard said that he 'would not consent to make Halifax the terminus of the voyage even if the present subsidy were doubled, because such a measure would be ruinous to the line, both as regards passengers and freight.' The committee stated that any change in the contract could only be made with the consent of the contractors, and they refused 'to entertain the proposal upon any conditions. . . . As regards passengers, those who land at Boston and New York, compared with those who land at Halifax are as 30 to 1. . . . The time occupied in the journey from Boston to Montreal is now 13 hours; from New York somewhat more. The distance from Halifax by railway to Montreal will be upwards of 700 miles and probably will not, in the most favourable circumstances, be travelled in less than 30 hours. Therefore . . . we think it probable that many persons going to Canada (certainly those bound for the Upper Province) would prefer a vessel which would land them at Boston to one which carried them to Halifax. . . . We are informed that the amount of cargo for Halifax is insignificant compared with that for the United States, each steamer taking no more than 5 to 10 tons to the former port; and although this is, no doubt, partly owing to the fact that the owners discourage the shipment of cargo for Halifax on account of the inconvenience and delay caused by the landing of it during the short stoppage of their vessels (1 hour 50 minutes), yet it is to be observed that the general character of the merchandise sent from England to the North American colonies is not such as to be remunerative to large steam vessels under any circumstances; the great bulk being coarse goods which can be conveyed equally well and at a lower rate by sailing vessels.'

and 1620 third-class passengers, were launched in 1913 for this service. The best boats of the Cunard fleet, however, have never been scheduled to call at a Canadian port since 1867.

The company has pursued its conservative way with slow but sure progress, and to-day possesses one of the finest passenger fleets on the Atlantic. It was converted into a joint stock company in 1878 with a capital of £2,000,000 sterling, but the stock was not opened to public subscription until 1880, when large outlays were being made for new steamships. In 1862, the year in which the *Scotia* was launched, it contracted for the *China*, the first of its iron screw steamers. The *China* was a fine boat of 2539 gross tons and had a speed almost equal to that of the *Scotia*, although she consumed only half as much coal. Compound engines were first used in the *Parthia* and the *Batavia* in 1870, and were employed four years later in the *Bothnia* and the *Scythia*. In 1881 the Cunard Company made a new departure in the *Servia*, which was built of steel. This vessel made 16·9 knots on her trial trip and reduced the time from Queenstown to New York to 6 days 23 hours and 50 minutes.

The *Servia* was the first of the larger ocean vessels such as constitute the present express fleet. She was followed in 1884 by the celebrated *Umbria* and *Etruria* in which the single screw reached its limit of efficiency. Then, in 1893, came the *Campania* and the *Lucania*, the first of the twin-screw steamships built by the company. These are each 620 feet 6 inches long and have engines of 30,000 horse-power. The *Lucania* in 1894 broke all former records by making the westward voyage in 5 days 7 hours and 23 minutes, at an average speed of slightly over 21·81 knots an hour. Her highest average speed on a voyage has slightly exceeded 22 knots.

But all previous records have been excelled by the latest additions to the Cunard fleet, the *Mauretania* and the *Lusitania*. These were built according to an arrangement with the British government, which, when the International Mercantile Marine Company, popularly known as the Morgan Shipping Trust, was formed in 1902, agreed to lend the Cunard company a sum not exceeding £2,600,000 at 2¾

per cent interest, to build the new vessels, and also to grant it an annual subsidy of £150,000 for twenty years. The company for this consideration agreed to remain a purely British undertaking and to keep its vessels at the disposal of the government for twenty years. The *Lusitania* and the *Mauretania* have each a gross tonnage of 40,000 tons and their turbine engines of 75,000 horse-power are designed to drive them at a speed of 24½ knots. The *Mauretania* on her maiden voyage, however, attained a speed of 25 knots for a day's run and a maximum speed of 25½ knots. She made the eastward passage in 4 days 22 hours and 21 minutes. These vessels, fitted out with all the luxurious accommodations of a modern hotel, represent the highest development of the shipbuilder's art.

The Allan Line

The Cunard Line, founded by a Canadian, is, in fact, less distinctly Canadian than the Allan, albeit the latter was established by a Scotsman. That Scotsman was Hugh (later Sir Hugh) Allan, the second son of Captain Alexander Allan, a merchant mariner of Saltcoats, Scotland, at which place Hugh was born in 1810. The father had been early apprenticed to the sea and by 1820 had risen to the command of the *Jean*, a small brig which was employed for several years carrying supplies to the army of the Duke of Wellington in the Peninsula. After the close of hostilities he turned his attention to Canada, and in 1822 made his first voyage from Glasgow to Quebec, later establishing a regular service of clipper ships between these ports. In 1826, when fifteen years old, Hugh sailed to Montreal with his father on the big *Favourite*, and made Canada his home. For some years after his arrival he was a bookkeeper in a dry-goods house, but in 1831 he entered the employ of Millar, Edmonstone and Company, ship-agents and shipbuilders, and was sent by them to the Eastern Townships to buy grain for export. Four years afterwards he became a partner in the firm, as did also his brother Andrew in 1839. In 1861 the Allans obtained complete control of the firm, which has since been known as the Hugh and Andrew Allan Company.

Hugh was a man of quick decision and great tenacity of purpose. Accustomed to seeing his will carried out, he could brook no unnecessary delay in the execution of his plans by his associates. His whole life was one of boundless activity. Not only was he interested in the great steamship line which bears his name, but he was the founder and president of the Merchants Bank and the president of the Montreal Telegraph Company, as well as being on the directorates of many other important business concerns. His association with what was known as the 'Pacific Scandal' in connection with the building of the Canadian Pacific Railway casts a shadow over an eminently useful career. Whatever the connection of Sir Hugh Allan with this regrettable affair, Canada nevertheless recognized, when he was laid to rest in 1882, that she owed an incalculable debt to the energy and the ability of this ambitious Scotsman.

The first vessels in which Hugh and Andrew Allan had an interest were sailing craft owned in conjunction with their father and brothers, who had established a firm in Glasgow. These were small but staunch and fast ships of from 350 to 450 tons register plying between Montreal and Glasgow, Liverpool and London. They possessed such popular and patriotic names as the *Canada*, *Caledonia*, *Cambria*, *Britannia* and *Albion*.

As the production of Canada increased and trade with the mother country developed, the need of a line of steamships sailing from the St Lawrence became increasingly apparent. In 1852 the Canadian government accordingly advertised for tenders for a service to carry the mails, and, the Allans not then being able to submit a tender, the contract was let to a Liverpool firm, McKeen, McLarty and Lamont, who, for a subsidy of £1238 a trip, agreed to maintain a fortnightly service in summer between Montreal and Liverpool, and a monthly service in winter between Portland and Liverpool. On May 10, 1853, their first steamer, the *Genova*, a small vessel of 350 tons, arrived at Quebec and had the distinction of being the first inward-bound ocean steamship on the St Lawrence. Soon afterwards came the *Sarah Sands*, a slow and cumbersome old boat of 931

tons, and twice during the same year the *Lady Eglinton*, a vessel of 335 tons. Three other boats, the *Charity*, the *Cleopatra* and the *Ottawa*, were added to the fleet during the next year. The contract with the government stipulated that the eastward voyage should be made, on the average, in at most thirteen days, and the westward in fourteen. The ships provided, however, were entirely unequal to these requirements. The *Ottawa*, for example, took forty-three days to reach Quebec on her first trip, and the *Charity* twenty-seven. The service was so unsatisfactory that at the end of eighteen months the government cancelled the contract and made new arrangements with the Allans.

The two brothers, together with a number of Quebec, Montreal and Kingston merchants, had formed the Montreal Ocean Steamship Company, largely owing to the fact that Montreal had gained a winter port upon the completion in 1852 of the Atlantic and St Lawrence Railway to Portland. The company in 1853 commissioned the Dennys of Dumbarton to build two iron screw steamships, the *Canadian* and the *Indian*, for the St Lawrence route. These vessels were about 270 feet long and had a speed of approximately 11 knots. The *Canadian* made her initial voyage to Quebec in 1854, but both she and her sister ship were withdrawn from this route to carry troops and munitions of war to the Crimea, for which service high rates were secured.

When the government cancelled the contract with McKeen, McLarty and Lamont, the Allans were in a position to resume their St Lawrence service. They agreed, for an annual subsidy of £25,000, to provide a fortnightly mail service. Two new steamships, the *Anglo-Saxon* and the *North American*, of the same size and type as the *Canadian*, were thereupon ordered from the Dennys, and the service was begun in the spring of 1856 by the *Canadian*. The ships carried large cargoes and provided excellent accommodation for passengers. The fare for the eastward voyage was $80 and for the westward 18 guineas—a much lower rate than was charged by other transatlantic lines.

In 1858 the Allan brothers came to the conclusion that a weekly service would be a paying venture, and began

negotiations with the government for an increased subsidy for such a line. The other partners, however, thought that a weekly service was premature and consented to sell their interests in the company to the Allan brothers, who then made a contract with the government whereby they agreed to carry the mails weekly for an annual subsidy of $208,000, and forthwith began the building of four new vessels—the *Bohemian*, the *Hungarian*, the *Nova Scotian* and the *North Briton*. These were boats of large cargo capacity, each 300 feet long and of 2200 gross tons, with a speed of from 11 to 13 knots an hour. The line was in every respect a success until 1859, when the severe effects of the credit panic of 1857 told heavily upon trade. The company, in view of the depression, thought it inadvisable to continue the service, but the government came to its assistance by doubling the subsidy. However, heavy penalties were imposed for delays in delivering the mails, and these were thought to be largely responsible for the series of disasters which later afflicted the vessels of the line.

The disasters continued over a period of about ten years. They were due not only to the penalties referred to, but also to the difficult navigation in the Gulf and River St Lawrence, the incompetency of pilots, the absence of beacons and buoys, and the deviation of the compass, which was very pronounced when the vessels entered the St Lawrence. The disasters began in 1857 with the wreck of the *Canadian*, which came to grief below Quebec through the incompetency of the pilot. In 1859 and 1860 respectively the *Indian* and the *Hungarian* were lost off the coast of Nova Scotia. A second *Canadian* and the *North Briton* were wrecked in 1861, and in 1863 the *Anglo-Saxon* and the *Norwegian*—the latter a boat of 2400 tons built but two years previously—while in the following year the *Bohemian* met her fate on the Alden rock, near Portland, Maine. Most of these wrecks were attended with much loss of life. Such a continuation of ill-fortune would have daunted most men, but the Allans fought bravely against it. Finally, the clouds lifted, and since 1872 they have lost but comparatively few ships.

As trade expanded the activities of the Allans were

extended. In addition to the mail service from Liverpool to Montreal, a new route was opened from Glasgow to Montreal in 1862, and ten years later this was made a weekly service. Beginning about 1875 a large cattle export trade was carried by this line, but of recent years the increasing home demand for meat and the disappearance of the western cattle ranges before the settler has caused it to decline very markedly. The *Pretorian*, of 7640 gross tons and having a speed of 14 knots, the *Scandinavian*, a twin-screw steamer of 12,100 gross tons and a speed of 16 knots, and the *Grampian* and *Hesperian*, two twin-screw vessels built in 1907 and 1908 respectively, now run between Glasgow and Montreal. Both the *Hesperian* and the *Grampian* have a gross tonnage slightly exceeding 10,900 tons, are 502 feet long and on their trial trips attained a speed of 16½ knots. Each has accommodation for 1500 passengers.

A third service was opened from Glasgow and Liverpool to Philadelphia, calling at St John's, Newfoundland, and at Halifax. The steamers now used on this route are the *Carthaginian*, *Mongolian*, *Pomeranian* and *Sardinian*. In 1876 a service was established between Glasgow and South America, largely for carrying cattle and frozen meats. The company now employs five cargo steamers sailing from Glasgow and Liverpool to Buenos Ayres. In 1879 a direct service was begun between Glasgow and Boston. The *Parisian* and *Numidian*, carrying only second-class passengers, are now employed in maintaining fortnightly sailings between these ports. The *Parisian* is one of the most popular ships the Allan line has ever owned. She is a steel ship of handsome lines, 440 feet long and of 5365 gross tons, and was built by Robert Napier and Sons, on the Clyde, in 1881. She has an average speed of between 14 and 15 knots, and in 1896 ran from Moville to Rimouski, where the mails have been landed since the completion of the Intercolonial Railway in 1876, in 6 days and about 13 hours. She has been one of the most fortunate of ships, having never met with a serious accident in her whole career.

About the time when the Glasgow-Boston service was begun steamers were placed on the route from Montreal to

London direct. A weekly summer service is now maintained between these two places, with calls at Havre and Plymouth, by the *Scotian*, *Ionian*, *Lake Erie*, *Sicilian* and *Corinthian*. This service is subsidized by the Dominion government for the purpose of encouraging trade with France.

In the course of its career the Allan Line has absorbed several other lines of ocean steamships. In 1891 the State Line, running between New York and Glasgow, became financially embarrassed and its whole fleet was purchased by the Allans, who continued the Glasgow-New York service. The Allan Line has also absorbed the greater part of the fleets of the Royal Exchange Shipping Company and of the Hill Line.

Although the Allan Line has been outdone in the matter of speed by the Cunard and some other lines, in several important respects it has been the leader in adopting improvements in transatlantic steamships. Its steamship the *Bavarian*, built in 1879 by the Dennys at Dumbarton, was the first Atlantic liner built entirely of steel. The *Parisian* was the first transatlantic vessel to be fitted with bilge keels, she having been equipped with this improvement in 1884. The Allan Line was also the first to adopt the turbine engine for transatlantic service, the orders for building the *Virginian* and the *Victorian* being given before the commission appointed by the Cunards to inquire into the possibility of using this type of engine for the *Mauretania* and the *Lusitania* had made its report.

The finest steamers of the Allan Line are to be found in the Montreal-Liverpool service. They are the twin-screw steamers *Corsican* and *Tunisian*, of 11,000 and 10,576 gross tons respectively, and the well-known triple-screw turbine steamships *Victorian* and *Virginian*. These vessels are of 12,000 gross tons burden, 520 feet in length, 60 feet beam and 41·2 feet in depth. They were launched in 1905, the former being built by A. Stephen and Sons, Glasgow, and the latter by Workman, Clark and Company, Belfast. They are 19-knot vessels, but the *Victorian* on her trial trip steamed 19·5 knots and the *Virginian* 19·83. The record passage of the former from Liverpool to Quebec is 6 days and 38 minutes

and was made in August 1909. The *Virginian* made her record trip in August 1906, when she completed the voyage from Moville to Rimouski in 5 days and 13 hours. The efficiency of the engines of the modern ocean liner is shown by the fact that the coal consumption of these vessels when steaming at the service speed of 17 knots is only 1·4 pounds indicated horse-power per hour.

In 1913 the Allan Line launched for the Montreal-Liverpool service its two largest and fastest mail and passenger steamers, the *Alsatian* and the *Calgarian*, each 600 feet in length, 72 feet in breadth and of about 18,000 tons register, with quadruple screws and turbine engines of 20,000 horse-power designed to drive them at a speed of from 19 knots an hour. They have accommodation for 200 first-class, 500 second-class, and 1000 third-class passengers.

The Dominion Line

The Dominion Line, like the Allan Line, began with sailing vessels, although at the time of its inception, 1870, steam was extensively used as a motive power for ocean-going vessels. The line was formed by a number of merchants trading from Liverpool to the southern Gulf States and was originally known as the Mississippi and Dominion Steamship Company. Its vessels sailed from Liverpool to New Orleans in winter and from Liverpool to Montreal in summer. In the course of time the southern trade was abandoned and the vessels were all employed in the Canadian trade, using Montreal as their western terminus in summer, and Portland, Maine, in winter. The names of its early vessels, the *St Louis*, *Vicksburg*, *Memphis*, *Mississippi* and *Texas*, all under 3000 gross tons, were given in deference to the Southern States. When, however, the company gave its whole fleet over to the Canadian trade, the new vessels which were then built bore such names as the *Dominion*, the *Ontario*, the *Toronto*, the *Ottawa* and the *Montreal*. The size and speed of its ships were increased; it became a sturdy competitor with the Allans for both freight and passengers; and finally received a share of the

mail subsidy. In 1882, the *Sarnia*; in 1883, the *Oregon*; in 1884, the *Vancouver*—a splendid vessel of over 5000 tons and with a speed of 14 knots; and, in 1891, the *Labrador*, of 4737 gross tons, were built for it. The *Labrador* was both a freight and a passenger vessel, the distinctive feature about her equipment being the special arrangements she had for carrying cattle. In October 1896 she made the voyage from Moville to Rimouski in 6 days and 8 hours, the record passage up to that time. She was totally wrecked on the west coast of Scotland in 1899, but no lives were lost.

These were evil days for Atlantic steamship lines, and the Dominion Line had its share of reverses, a large number of its vessels being wrecked. Even more serious than this, however, was the depression of trade, the keen competition for business and the resulting low freight rates. The line was not a financial success, and in the autumn of 1894 it was sold at a great sacrifice.

The new management, the British and North Atlantic Steam Navigation Company, at once adopted a bold and vigorous policy, building new ships of larger tonnage and greater power to replace the inferior boats. Two new vessels were built, the *Angloman*, which was totally wrecked in the Irish Sea in 1897, and the *Scotsman*. Both of these ships had great cargo capacity and accommodation for only a limited number of passengers. The *Scotsman* was of an average speed of from 12 to 13 knots and could carry from 9000 to 10,000 tons of cargo. On one voyage from Montreal to Liverpool she had on board 1050 head of cattle, 2000 sheep and 47 horses. She was wrecked in 1899 in the Strait of Belle Isle, eleven passengers losing their lives.

The finest product of the new policy of expansion was the steamship *Canada*, launched at Belfast in 1896. The *Canada* is a twin-screw vessel 515 feet long, of between 9000 and 10,000 gross tons and with engines of 7000 horse-power. Although built as a 16-knot ship, she has frequently attained a speed exceeding 17 knots. On her second trip she made the passage from Liverpool to Rimouski in 6 days 11 hours and 40 minutes. Among the vessels built for this line were the *Norseman* of 9856 tons, and the *Columbus*, a vessel of

15,378 tons built for the Boston-Liverpool trade. It was the *Columbus* which, after being acquired by the White Star Line and renamed the *Republic*, so signally demonstrated the value of wireless telegraphy on ocean vessels. She was rammed and sunk by the Italian Lloyd steamer *Florida* off Nantucket in 1909, but before she sank her wireless operator succeeded in calling the *Baltic* to her aid, with the result that all on board were rescued. Recently control of the line was secured by the White Star Line, and it is now worked under the name of the White Star-Dominion Canadian service. Its two largest and finest vessels are the *Laurentic* and the *Megantic*, each of nearly 15,000 tons burden and built especially for the Canadian service by Harland and Wolff of Belfast in 1909. The *Laurentic* is a triple-screw steamer with a combination of reciprocating and low-pressure turbine engines, while the *Megantic* is a twin-screw steamer with reciprocating engines only. They are the finest vessels entering the St Lawrence and the most expensively fitted out for the accommodation of passengers. Each is 565 feet long and the arrangement of their passenger accommodation is identical. The *Teutonic* and the *Canada* are the one-class (second class) cabin steamers of this line. The former is a 10,000 ton vessel and was transferred from the New York-Southampton service of the White Star Line. She is a twin-screw steamship of great power, built in 1889 by Harland and Wolff, and was for a number of years the crack White Star steamer sailing out of New York. Furthermore, she has the distinction of being the first merchant vessel equipped for cruiser service in time of war. She is the fastest vessel in the one-class-cabin Canadian service, having made, in 1911, the record voyage from Liverpool to Father Point in 5 days 16 hours and 54 minutes.

The Beaver Line

The Beaver Line was founded a few years later than the Dominion Line, and, like the latter, has been taken over by another company. It was established in 1876 by Montreal merchants under the name of the Canada Shipping Company.

However, since its flag bore the figure of a beaver, it soon became known popularly as the Beaver Line. At first it maintained a service between Liverpool and the St Lawrence with five sailing vessels named after the Great Lakes. Staunch craft they were, built of iron and of good speed for ships so propelled ; but on account of their limited size (900 to 1274 tons) and their motive power they were unable to compete successfully with the steamships of the day. To save itself financially, the company discarded sail for steam and in 1875 launched its first steamships, the *Lake Champlain*, the *Lake Megantic* and the *Lake Nipigon*. But, in common with most shipping companies at that time, it made the mistake of building too small ships. The three vessels were each of about 2200 gross tons and were no match either in cargo capacity or speed for the vessels of the larger steamship lines. As a consequence they attracted few passengers, and their charge for handling freight was, comparatively speaking, high. In four years' time two other boats, larger, but still too small, were built. These were the *Lake Manitoba* and the *Lake Winnipeg*, each 355 feet long and of about 3300 gross tons. Next came the *Lake Huron*, 385 feet long and of 4040 gross tons, built on the Clyde in 1881. It was not, however, till 1885, when the company launched the *Lake Superior*, that it had a boat that could really compete with the Allans, one of its strongest competitors. The *Lake Superior* was a 400-foot ship of 4562 gross tons, splendidly fitted out for the accommodation of passengers and well adapted for freight traffic. Her speed was 13 knots. The *Lake Ontario*, of 4502 gross tons and having a speed of 13 knots, was purchased in 1887. This action was necessary as, between 1878 and 1886, the company had lost three of its vessels by shipwreck.

With the *Lake Superior* and the *Lake Ontario* the Beaver Line gained a footing in the passenger trade, but it depended mainly for its revenue on the cargo business. All its vessels carried horses, cattle and sheep, and most of them were specially fitted for transporting dairy produce. The keen competition and the low freights of the early nineties, however, were too much for the company to withstand, and in

1895 it was forced to go into liquidation, being sold to satisfy its bondholders. The line then came under the management of D. and C. MacIver, who in 1897 secured a subsidy for carrying the mails from Liverpool to Halifax during the winter months. The *Gallia*, of the Cunard Line, and the *Tongariro*, of the New Zealand Shipping Company, were purchased, and the service continued until 1899, when Elder, Dempster and Company of Liverpool took it over. The building of a number of new vessels to bring the service up to a condition of competitive efficiency was at once begun, the *Lake Erie* of 7559 tons gross register, built at Glasgow in 1900, being typical of the new vessels added to the fleet. In 1903, however, the vessels of the Beaver Line were sold to the Canadian Pacific Railway, and became a part of the Atlantic fleet of this powerful and aggressive Canadian corporation.

Canadian Pacific Railway Steamship Line

The Canadian Pacific Railway, possessing lands, mines, hotels, railways and steamship lines on both the Atlantic and the Pacific oceans as well as on the Great Lakes, is the most prominent example in Canada of the modern tendency which economists call the integration of industry. Possessed of a transcontinental railway passing through millions of acres of its own prairie lands awaiting the coming of the settler, the company had ample justification for desiring its own steamship service to Britain, the original home of Canada's best settlers and the storehouse of the wealth required to develop the natural resources of the country. Moreover, with its transcontinental line across Canada and its Pacific steamship service from Vancouver to Japan, China, New Zealand and Australia, it could count upon carrying a large share of the British traffic to and from the antipodes had it an efficient Atlantic steamship service with a well-organized traffic department.

When the company purchased the transatlantic vessels of Elder, Dempster and Company in 1903, it came into the possession of four twin-screw passenger and cargo steamers

and some ten vessels of a purely cargo type. These were of various sizes, from the little *Monmouth* of slightly over 4000 gross tons to the *Lake Manitoba*, an ocean greyhound of nearly 10,000 tons. The vessels for which the line is best known, however, are the 'Empresses' of the Atlantic built at Glasgow by the Fairfield Shipbuilding and Engineering Company in 1906. These are the *Empress of Britain* and the *Empress of Ireland*, two twin-screw steel steamships, each 548 feet long, of slightly over 14,000 tons gross and having a sea speed of 18½ knots. They make the passage from Liverpool to Quebec in less than six days and a half, only about four of which are spent in crossing the main ocean. The mail terminals are Liverpool and Rimouski, and the shortest time made by them between these two ports is 5 days 15 hours and 30 minutes. Each has accommodation for 350 first-class, 350 second-class and 1000 steerage passengers.

The Canadian Pacific Railway Company also maintains a fortnightly winter service between St John, Halifax and London, calling at Antwerp, Belgium, on the west-bound voyages, receiving a subsidy of $1500 per round trip. The *Lake Michigan*, the *Montezuma*, the *Mount Royal*, the *Montreal* and the *Mount Temple*, modern steel cargo vessels of about 12 knots' speed, ranging from 469 to 485 feet in length and each of about 8500 tons gross register, are employed on this route. In summer these vessels ply to the St Lawrence ports. In 1913, owing to a disagreement with the North Atlantic Passenger Conference, the company inaugurated a four-weekly service between Trieste, Austria, and St John and Montreal with the steamships *Lake Champlain* and *Lake Erie*, renamed the *Ruthenia* and *Tyrolia*.

Canadian Northern Railway Steamship Line

A second line of railway transatlantic steamships was established in 1910 by the Canadian Northern Railway under the name of Canadian Northern Steamships, Limited. This company operates the Royal Line, employing two splendid turbine triple-screw express steamships, the *Royal*

Edward and the *Royal George*, on a fortnightly service between Halifax and Bristol in winter and between Montreal and Bristol in summer. The *Royal Edward* and the *Royal George* are sister ships, each 545 feet long, 21 feet 5 inches draught, of 11,000 tons gross register, and with a shaft power of about 19,000 horse-power. On their trial trips they attained a speed of over 20½ knots. They were built in 1907 by the Fairfield Shipbuilding and Engineering Company for the Mediterranean service between Alexandria and Marseilles, and while on that route were known as the *Cairo* and the *Heliopolis*. Their passenger accommodation was modified for the Atlantic service and their fuel supply increased. In the autumn of 1912 the *Royal George*, when going at a high rate of speed, stranded upon a rock in the St Lawrence a short distance below Quebec. After remaining fast for several weeks she was refloated and found to have suffered no serious injury.

Other Canadian Lines

In addition to the Allan service to Glasgow, the Donaldson Line maintains passenger and freight steamers weekly between Montreal and Glasgow in summer, and St John and Glasgow in winter. This Canadian service was begun in the early eighties by Donaldson Brothers of Glasgow, who operated a line of vessels trading to the Argentine Republic.

The Donaldson Line steamships running to Canada have made a specialty of carrying horses and cattle, and of late years have given considerable attention to the passenger business. The line now employs four passenger and cargo twin-screw steamships on the Canadian route : the *Athenia* and the *Letitia*, of 10,000 gross tons each, and the *Cassandra* and the *Saturnia*, each of 9000 gross tons. It owns, besides, eight smaller freight steamers which are variously employed, some sailing to the St Lawrence, others to St John, N.B., Newfoundland, Baltimore and Newport News.

The Thomson Line, which maintains a fortnightly service between Montreal and London in summer and St John and London in winter, began with a number of sailing vessels

trading between Mediterranean countries and Canada. A large trade in brandy, wines and fruit was gradually worked up, since the fruit kept much better on the cool northern route taken by these steamers than on the southern route pursued by the steamers going to United States ports. The *Cervona*, *Devona* and *Hurona*, all under 4000 tons gross, are the steamships now running fortnightly from London to Canada. A number of other steamers of this line trade between Mediterranean ports and Montreal and between ports on the east coast of Great Britain and Montreal.

The Manchester Liners, Limited, maintain a weekly freight service between Montreal and Manchester in summer and St John, Halifax and Manchester in winter. Furness, Withy and Company run a fortnightly service between Montreal and Hull, and also between St John, Halifax and London; while the vessels of the Ulster Steamship Company or 'Head' Line maintain a fortnightly service from Canada to Dublin and Belfast. In 1911 a fortnightly direct service to Havre, France, from Quebec was inaugurated by the Campagnie Générale Transatlantique, the first steamer to leave Canada being the *Niagara*. A weekly service is contemplated by this line. One of the latest steamship lines to be established between Canada and Europe is the Canada Line. This is run by the Hamburg-American, the Holland-American and the North-German Lloyd Lines. Montreal and Hamburg are the terminal ports, but calls are made at both Bremen and Rotterdam. The Austro-American Steamship Company in 1913 began a monthly service between Canadian and Mediterranean ports.

Several lines ply between Canada and the West Indies. Canada has maintained a trade with these islands ever since the French occupation, and there is now every possibility of an appreciable increase in this intercourse on account of the trade agreement of 1912, by which duties were abolished or reduced on various articles of trade exchanged between the two countries. In furtherance of this agreement the Dominion government in 1912 called for tenders for an improved steamship service from Canada to the British West Indies and Guiana, and also from Canada to Jamaica.

Pickford and Black, Ltd., who sail boats of small tonnage about every twelve days from Halifax and St John to Bermuda, the West Indies, and Demerara, and also to Jamaica, via Turk's Island and Santiago, were given a subsidy of $200,000 a year to put speedier and better boats on their service. Elder, Dempster and Company now maintain a monthly service between Montreal and Halifax and West Indian, Cuban and Mexican ports with the ten-knot steamers *Bornu*, *Sokoto* and *Memnon*, small vessels of slightly over 3000 gross tons each. The freight steamers of the Direct Line also frequently trade between Canadian and West Indian ports.

Communication is maintained with South Africa by Elder, Dempster and Company, who are under contract with the Dominion government to provide a ten-knot monthly service, cargo and mail, from Montreal, Halifax and St John to Cape Town and other South African ports. Nine steamers are employed on this service, ranging in size from the *Monarch*, of 7355 gross tons, to the *Coaling*, of 3794 gross tons.

The New Zealand Shipping Company maintains a monthly service between Montreal and New Zealand and Australian ports, receiving therefor an annual subsidy of $120,000 from the Dominion government. St John and Halifax are its Canadian winter termini. Canadian trade with Australia and New Zealand is steadily growing, the most noticeable increase being in the export of Canadian manufactures.

Pacific Shipping

The principal shipping lines having their Canadian termini on the Pacific coast are those to China, Japan, Australia and New Zealand. The most important of these was established by the Canadian Pacific Railway in 1891, when the *Empress of India*, the *Empress of China* and the *Empress of Japan* began their regular trips from Vancouver and Victoria to Japan and China. Much attention was attracted to these boats when the line was inaugurated by the company advertising cheap round-the-world trips from

Britain via Gibraltar, the Suez Canal, to Vancouver, thence overland by the Canadian Pacific Railway to the Atlantic coast, where any line of Atlantic steamers could be taken for Britain. Besides the 'Empresses,' the company also ran three smaller boats, the *Tartar*, the *Athenian* and the *Monteagle*, on the transpacific route, the two first-named vessels being originally used in the coasting service during the Klondike gold rush.

The Pacific 'Empresses' are sister ships, 485 feet long, 51 feet broad and 36 feet deep, and were built by the Naval Construction and Armaments Company at Barrow-in-Furness, England. They are twin-screw steel ships constructed on beautiful lines, have a gross tonnage of nearly 6000 tons and are equipped with triple-expansion engines of 10,000 indicated horse-power. In accordance with a contract entered into with the British government, they may be converted into armoured cruisers for use in the British navy.

Under the contract for carrying the mails, the speed of the vessels was to be 17½ knots on the measured mile and 16 knots at sea. The company, however, decided to exceed these requirements, and contracted with the builders for a speed of 18 knots on the measured mile and 16½ knots on a 400-mile sea trip. On the trial trips a speed of over 19 knots an hour was developed on the measured mile, and the long sea test was run with a considerable margin over speed requirements. The *Empress of Japan* has established a record for the transpacific voyage, covering the distance between Vancouver and Yokohama, including stops, in 19 days 10 hours and 22 minutes. The *Empress of China* was wrecked on the coast of Japan in 1911, and her place in the mail service has been taken by the *Monteagle*.

Two new transpacific liners, the *Empress of Asia* and the *Empress of Russia*, were built for the Canadian Pacific Railway Company in 1912, by the Fairfield Shipbuilding and Engineering Company of Glasgow. They are 590 feet long, 68 feet wide, 46 feet deep, and have a gross tonnage of, approximately, 15,000 tons. They are quadruple-screw turbine steamers, capable of maintaining an average sea

speed of 18 knots an hour on about 20,000 indicated horse-power. Each is provided with a cruiser stern and an under-hung rudder. Accommodation is provided for 200 first-class, 100 Asiatic second-class and 800 Asiatic third-class passengers. The maiden trips of these vessels, made in 1913, consisted of a round-the-world voyage from Liverpool to Vancouver, the *Empress of Russia* sailing via the Mediterranean and the *Empress of Asia* via the Cape of Good Hope.

A monthly steamship connection between Canada and Australia was established in 1893 by the steamships *Warrimoo* and *Miowera*, of about 5000 gross tons each. This service is now operated at three-weekly intervals from Vancouver to Auckland and Sydney via Honolulu by the Union Steamship Company of New Zealand, which is subsidized by the Canadian government to the extent of £37,090 annually. The steamers *Makura*, *Marama* and *Zealandia*, modern steel vessels with triple-expansion engines and fitted out with every convenience for passengers that is to be had on the Atlantic liners, are employed in this service. The *Niagara* of this line, a vessel of 13,000 gross tons, built in 1912, was the first large ocean liner burning oil and equipped with combination reciprocating and turbine engines to ply to Canadian Pacific ports.

There are various other steamship lines between Canadian ports on the Pacific and foreign countries. The Blue Funnel freight steamships trade between the United Kingdom and Vancouver via the Suez Canal, while the Harrison Direct Line runs the steamships *Chancellor* and *Director* between Antwerp, Glasgow, Liverpool and Vancouver. In 1913 the Royal Mail Steam Packet Company and the Hamburg-American Line inaugurated round-the-world services touching at Canadian ports. The Andrew Weir liners maintain a service between Vancouver and the Orient and also engage in the Australian trade from Vancouver, Puget Sound and San Francisco. The Nippon Yusen Kaisha and the Osaka Shosen Kaisha maintain services between Yokohama and Vancouver. Between Vancouver and Salina Cruz the Canadian-Mexican Pacific Steamship Line, which is subsidized by the Canadian and Mexican governments, runs

in conjunction with the Tehuantepec Railway Company, which connects with Atlantic liners at Puerto, Mexico. In 1913 Grace and Company established a line connecting South American, Mexican, and United States Pacific ports with Victoria and Vancouver. New lines between Canadian Pacific ports and Europe are proposed in anticipation of the opening of the Panama Canal.

Ocean Terminal Facilities

Perhaps nowhere is the rapid industrial and commercial development of Canada more strikingly apparent than in the improvements being made in ocean port and harbour facilities on both the Atlantic and the Pacific sea-boards. Immense sums of foreign capital are flowing into numerous undertakings of all kinds, which have not yet become fully productive. The time is not far distant, however, when a stage in industrial development will have been reached in which the past investments of brain and brawn and capital will bring forth manyfold what they are now producing. When this time arrives the foreign commerce of the country will receive a great impetus, and large harbour facilities must be provided against it.

On the Pacific coast the near approach of the completion of the Panama Canal has been the principal direct cause of improved ocean terminal facilities. The three principal Canadian ocean ports on the Pacific are Prince Rupert, Vancouver and Victoria ; the first situated on the northern, the other two on the southern portion of the coast of British Columbia. At Prince Rupert the splendid natural harbour is being provided with docks, piers and other port facilities by both the Dominion government and the Grand Trunk Pacific Railway. The railway company is also constructing a large shipbuilding plant, and a dry-dock having a lifting capacity of 20,000 tons and large enough to accommodate any vessel on the Pacific Ocean. The distance from Prince Rupert to Yokohama is 3800 miles, some 480 miles less than that from Vancouver to Yokohama.

Vancouver is 550 miles from Prince Rupert by coast

steamer and is only about 84 miles distant from Victoria. The latter is a port of call for all the ocean steamship lines. The entrance to its harbour, between Ogden and McLoughlin Points, is intricate, shoal and narrow. Ocean steamships, however, dock at two large wharfs in the outer harbour, where the general depth of water is over thirty feet at low tide. Vancouver has a splendid harbour, deep, spacious and safe, on Burrard Inlet. English Bay is the outer anchorage, Vancouver harbour proper being inside the first narrows, which are but a cable's length in width. Inside the narrows it is capacious and secure, the depth opposite the city at low water being 5½ fathoms in the vicinity of the wharfs to 36 fathoms in mid-harbour. At New Westminster, on the north bank of the Fraser River, fifteen miles from the point where the Fraser empties into the Strait of Georgia, there are excellent facilities for wharfage, a good depth of water and splendid anchorage.

On the eastern coast of Canada the principal seaports are Halifax, St John, Quebec and Montreal. During the summer months the great bulk of ocean shipping passes over the St Lawrence to or from Quebec and Montreal, but when the St Lawrence is closed by the ice in winter, St John and Halifax become the chief shipping centres.

Montreal, at the head of ocean navigation on the St Lawrence, is not only the financial and commercial metropolis of Canada, but the most important ocean port as well. The channel of the St Lawrence from Quebec has been deepened at an expense of many millions of dollars, so that the largest ocean liners now entering the river can steam to Montreal. Immense steel freight sheds, piers, miles of wharfs and numerous large stationary and floating grain elevators stand out conspicuously among the facilities provided for handling the volume of oversea commerce. A fire tug patrols the harbour, and a 75-ton floating crane, together with coal hoists and other loading and unloading machinery, is provided. The wharfage accommodation of the harbour has steadily increased: in 1866 it was 3·17 miles; in 1882 it had grown to 4·7 miles; while in 1912 the wharfs had a lineal measurement of 7·4 miles—all, with a single exception, having

water alongside of from 31 to 34 feet depth. The accommodation afforded shipping by the harbour is completed by an immense floating dry-dock, built by Vickers, Sons and Maxim, Ltd.

A hundred and sixty miles below Montreal is the ancient city of Quebec, once the busy port of the timber trade. It has a harbour affording wharfage accommodation for a large number of vessels of all sizes. The Atlantic liners which proceed to Montreal make it a port of call. The harbour of Quebec has deep-water quays with a depth of 40 feet of water alongside at low tide. At Lévis, across the river from Quebec, several dry-docks are located, one of them, under the control of the Quebec Harbour Commissioners, being 600 feet long, 62 feet wide and having a depth of 26½ feet of water on the sills. Immense harbour facilities are now under construction by the Harbour Commissioners. In the present year (1913) the Dominion government has granted to that body the sum of $3,500,000 for improvements and extensions. The Grand Trunk Pacific Railway Company is making the city one of its terminals, and the extensive terminal and port facilities which the company is building are expected to add materially to the shipping activity of the port.

St John and Halifax are the chief Canadian winter ports on the Atlantic coast. Prior to 1897 much of the Canadian winter transatlantic traffic passed through Portland, Maine, but in that year the mail subsidy that had been given to steamship lines making the latter port their terminus was withdrawn, and subsidized lines were thereafter required to make St John and Halifax their western winter termini.

St John is situated on the Bay of Fundy at the mouth of the St John River. It is a terminus of the Canadian Pacific, the Intercolonial and the Grand Trunk Pacific Railways, and its harbour is both safe and commodious. Immense harbour works are under construction by the Dominion government and by the Canadian Pacific Railway. There are at present in use eighteen deep-water berths for ocean steamers and thirty-eight wharfs, ranging in length from 200 to 1540 feet. At twenty-two of these the water is from 18 to 31 feet deep

at low tide. The tide rises and falls in the harbour from 20 feet at ordinary neap tides to 28 feet at spring tides. There are two large grain elevators with a combined capacity of 1,532,000 bushels, and excellent facilities are provided for handling export cattle.

Halifax harbour is one of the finest and safest in the world. From the entrance between Chebucto Head and Devil Island, which is five and three-quarter miles wide, it extends a distance of about thirteen and a half miles to the head of Bedford Basin, the latter a magnificent roadstead, completely landlocked and having an area of ten square miles. From George Island to the narrows at the entrance to Bedford Basin, a distance of three miles, the harbour is about three-quarters of a mile wide and is from ten to fourteen fathoms deep at low tide. Halifax possesses a large graving-dock, having a usable length of 570 feet, a breadth at the entrance of 85 feet, and a depth of 30 feet of water on the sills. Extensive ocean and railway terminal facilities are to be constructed by the Dominion government. The city is the terminus of the Intercolonial Railway, and the Canadian Pacific Railway has also secured an entrance to it by the purchase of the Dominion Atlantic Railway.

In point of tonnage Montreal is one of the greatest seaports of Canada. Although the St Lawrence is closed by ice during the winter months, the tonnage of vessels entering at and clearing from Montreal exceeds, with two exceptions, that at any other Canadian port, including those open throughout the year. In 1911 the sea-going vessels using this port were of 3,385,951 tons register, compared with a sea-going tonnage of 24,589,605 for the whole of Canada, of which 17,961,092 tons were of British and Canadian register. The proportion of steam to sail in the ocean tonnage entering at and clearing from Montreal is indicative of the steady transformation of the motive power of the ocean merchant marine from sail to steam. In 1864 only 36 per cent of the vessels using the port were propelled by steam; in 1897 the number had increased to 79 per cent; in 1891 to 91 per cent; and in 1911 99 per cent of the ocean vessels coming into Montreal were steamships.

Excelling Montreal in respect of tonnage is Vancouver. In 1911 vessels of 3,759,109 tons register entered at and cleared from this port. Victoria stands next, with a tonnage of 3,622,851; while Halifax and Quebec have 3,111,535 and 2,323,845 tons respectively. St John closely rivals Halifax with a tonnage of 2,012,425. The sea-going vessels entering at and clearing from Prince Rupert in the same year represented a tonnage of 542,974 tons—an increase of more than 60 per cent over that of 1909.

Besides causing the enlargement of present harbour facilities, the rapid increase in transatlantic traffic from Canadian ports is having its effect on the character of the service offered by the Canadian steamship lines. During the past quarter of a century much has been said and written in favour of a fast transatlantic passenger service. In all this discussion it has been tacitly assumed that a large subsidy would have to be offered by government, because the amount of traffic would not be sufficient to make such a service pay. Indeed, several attempts, all abortive, were made by the Dominion government to secure such a service. Now, however, the rapid development of the country and the attendant increase in the Canadian oversea trade have changed conditions very materially. Steamship companies find it to their financial advantage to increase the speed of their vessels and offer the very best accommodation to passengers. A trip to the Old Country, once undertaken only by the few who were under the necessity of making it, is now but a common incident of business or pleasure with thousands of Canadians. The vexed question of a fast passenger service is accordingly working out its own solution, without the necessity of an abnormally large government subsidy. Nineteen-knot steamships are not uncommon in the Canadian transatlantic service, and several vessels that have made more than twenty knots now ply between Canada and Great Britain. Canadian ports, moreover, have an advantage over those of the United States in being closer to Great Britain. Rimouski, by way of Belle Isle, is nearer Liverpool by some 560 miles, and Halifax is nearer by about 580 miles, than is New York. This, added to the fact that faster

steamships with better accommodation are being employed, is causing United States ports to lose their attractiveness for Canadians sailing to Europe, and the number of Canadian passengers and the quantity of Canadian exports carried in Canadian ships from Canadian ports have vastly increased.

In the same way Canada is gradually taking over the whole of her Atlantic mail service with England. The Dominion government in 1913 granted an annual subsidy of $1,000,000 to the Allan Line, the Canadian Pacific Railway Steamship Line, the Canadian Northern Railway Steamship Line, and the White Star-Dominion Line, for a tri-weekly mail service between Canada and Britain in summer and a semi-weekly service in winter. Previous to this an annual subsidy of $650,000 had been given these companies for a weekly service, but this arrangement had involved the additional payment of $185,000 annually to the United States for carrying Canadian mails from New York. Under the new arrangement it is expected that all the mails can be handled by the Canadian lines, thus obviating any payment to a foreign postal service.

THE BANKING SYSTEM OF CANADA

THE BANKING SYSTEM OF CANADA

The Early Years of Confederation

JUST before Confederation the Bank of Montreal had become the sole financial agent of the Canadian government and had undertaken very heavy responsibilities in the way of sustaining the credit of the government. To this end it had agreed to give up its own note issue and to substitute therefor the issues of the provincial government. As these government notes were made legal tender as between the banks and the public, the Bank of Montreal, through its influential position in the banking world, managed to induce the other banks to hold considerable quantities of the provincial notes in the form of reserves.

The admittedly rash multiplication of bank charters between 1850 and 1863, and the collapse of the two largest banks of Western Canada, the Bank of Upper Canada and the Commercial Bank, had led to a growing distrust of the Canadian banking system. As this attitude happened to coincide with the establishment of the national banking system of the United States, and the renunciation of its note-issuing powers by the Bank of Montreal, there was, for a time, a strong inclination in Canada towards the complete adoption of the new American system.

In November 1867 E. H. King, president of the Bank of Montreal, gave considerable impetus to the movement in favour of the adoption of the American system by publishing his views on the subject of a proper banking system for the Dominion of Canada, just established. The system which he recommended was virtually that of the United States, even to the establishment of independent local banks. The

note issue of the banks was to be restricted and to be founded entirely on government securities deposited with the receiver-general. The banks should also hold a specified reserve of specie or Dominion notes, the continued issue of which he strongly recommended. These views were shared by Thomas Paton, Canadian representative of the Bank of British North America, and were entirely accepted by John Rose, the new minister of Finance in succession to A. T. Galt. The principles enunciated were embodied in a series of resolutions which Rose laid before parliament on May 14, 1869, as the basis for the renewal of the bank charters for the next ten years. Committees of both houses of the new Dominion parliament had been appointed during the first session to deal with the problems of banking and currency.

At Confederation the Maritime Provinces introduced a number of banks into the Canadian circle. Chief of these were : the Bank of New Brunswick, established at St John in 1820 ; the Bank of Nova Scotia, established in 1832 ; the Commercial Bank of New Brunswick, chartered in 1834 ; the St Stephen's Bank, established in 1836 ; the Union Bank of Halifax, established in 1856 ; the Bank of Yarmouth, established in 1859 ; the People's Bank of Halifax and the People's Bank of New Brunswick, both established in 1864. Most of these were purely local banks without branches. The Bank of Nova Scotia, the most important of the Maritime Province banks, had a number of branches, the first of which was opened in 1837. The Bank of British North America had established branches in the Maritime Provinces. Several other banks had been chartered, but had either never come into actual operation, or after existing for a short time had afterwards closed their doors, or been merged in those already mentioned. There were also several private banks in operation, one of the most important being the Halifax Banking Company, established in 1825 and afterwards chartered in 1872.

The reports of the parliamentary committee revealed considerable diversity of opinion as to the proper basis of the paper currency of the country, and as to the general security of the banking system in the interests of both

shareholders and depositors. The interests controlled by the Bank of Montreal and the Bank of British North America, and the representatives from New Brunswick and Southern Nova Scotia, all favoured the American plan as recommended by E. H. King. The banks of Western Canada, however, and of Quebec and Halifax, were strongly opposed to any radical change in the existing system, under which the greater part of the paper currency was furnished by the banks under a very elastic system.

When John Rose introduced the government measure, embodying the plans of King, he endeavoured to defend it on certain fundamental principles. The first was that Canada had outgrown its earlier system of banking. Recent failures and the criticism which they had elicited seemed to indicate that it was no longer suitable for the enlarged interests of the country. It was essential to establish a safe national currency well known and readily acceptable throughout the Dominion. He drew some interesting parallels between American and Canadian conditions before and after the establishment of the national banking system of the United States. It was not proposed to introduce the changes in the Canadian system suddenly. The banks would continue as they were until June 1871, after which they would be required to reduce their note circulation twenty per cent each year, substituting for it the new series of national notes based on public securities deposited with the minister of Finance. The transition from the old to the new system would thus extend over five years.

It was admitted that it would require more capital on the part of the banks to support the new issue, but that was a necessary condition of the greater security to be imparted to the national currency. The lack of flexibility in the new note issue was the most difficult point to be met, but Rose pointed out that, while the banks would doubtless have a considerable proportion of their notes on hand during the slacker seasons of the year, they would still be receiving fair interest on the securities deposited to support them. On one point he accurately predicted the trend of future exchange conditions in estimating that an increasing proportion of the

country's exchange would be conducted by the cheque and clearing system, to the very great relief of the note circulation previously employed.

His suggestion that, in following the American example, the banks of Western Ontario would be able to obtain assistance from the eastern banks in the movement of the crops, did not at all appeal to the western bankers, who chiefly relied for their profits upon the moving of the Ontario crops. Mainly in consequence of this last feature, the opposition to the proposed changes was both strong and determined in both the Commons and the Senate, and very largely affected the normal following of the government itself.

Realizing the danger of attempting to force the measure through parliament, in order to cover its retreat the government agreed to postpone further consideration of the banking and currency policy until the following session. In the interval Rose, in virtue of the strength and permanence of the opposition to his scheme, abandoned the measure altogether, retired from the government and the country, and subsequently rose to distinction in Britain. At the same time King, the chief power behind the measure, retired from the active management of the Bank of Montreal.

Fortunately at this critical juncture Sir Francis Hincks, who had been connected with most of the previous developments in Canadian banking, returned to Canada on a visit, and was induced by Sir John Macdonald to remain and accept the position of minister of Finance with a view to bringing the country out of its financial dilemma. Sir Francis consented, and in the latter part of 1869 undertook the very difficult and unpromising task.

Profiting by the failure of his predecessors, and yet strongly in favour of a currency system based on government issues, he managed to make a working combination of the elastic note issue of the individual banks with a permanent substratum of government notes, monopolizing the smaller issues—at first under four dollars and afterwards under five dollars—and furnishing in both the lower and higher issues a legal tender currency uniform in appearance and value throughout the Dominion. As a matter of fact these

permanent legal tenders enabled the issues of the individual banks, which might be redeemed in them in all the provinces, to come into more rapid circulation and more general acceptance throughout the whole country.

As one means of gaining the assent of the Ontario bankers to his proposals, Sir Francis Hincks agreed to terminate, after six months' notice, the special arrangements with the Bank of Montreal for acting as sole financial agent for the government. Under the new arrangements proposed any or all of the banks might be employed to receive and pay government moneys, and in consequence to hold government deposits. At the same time the Bank of Montreal virtually remained in control of the international dealings of the government.

Early in 1870 before the opening of parliament Sir Francis Hincks had prepared two bills, one providing a general bank act for the Dominion at large, covering all the chartered banks, and another for the permanent establishment of a government paper currency afterwards known as Dominion notes. So completely had he made his peace with the banks that, notwithstanding the usual party opposition to government measures, his bills met with no organized opposition on the part of the banks and were ultimately successfully carried through parliament.

In his general argument for a paper currency which should be unquestionably safe, Sir Francis Hincks favoured the basing of the whole issue of paper currency upon government securities to be deposited by the banks. He pointed out that to simply give the noteholders a preference over depositors would be likely to result in favoured depositors becoming noteholders on the eve of the collapse of a bank. If, however, it was not possible, under the present condition of public opinion, to secure an absolutely certain note issue throughout all its denominations, he proposed to render perfectly secure at least the smaller notes which furnished the current medium of exchange for the country. These would be supplied exclusively by the government. He did not consider it possible as yet to render all bank notes acceptable at par throughout the Dominion. They would continue to

be redeemable chiefly at the places of issue, which he admitted would render their circulation more or less local rather than national. Individual banks might, however, provide for the redemption of their notes throughout the country. The double liability clause was continued and improved as to its effective operation. The bank returns to be furnished to the government were also improved and extended, but the public were warned that it was impossible by this method to ensure the country against mismanagement on the part of the banks. The public must, therefore, exercise due prudence and discrimination in dealing with the banks. With reference to specie reserves, he held it to be of small avail to prescribe a minimum reserve, since, apart from the difficulty of maintaining such a reserve in the midst of seasonable fluctuations in the volume of currency, the prescribed minimum was apt to be taken as all that was required of the banks. It also fostered the idea that specie reserves were all-important ; whereas the general investments of the bank and its balances abroad, particularly in London and New York, were also important factors in meeting bank obligations.

The bank tax was to be abolished, as also the requirement that the banks should invest one-tenth of their capital in Dominion securities. These were concessions to the banks in consideration of the extension of the field for Dominion notes, by requiring the banks to hold one-half of their reserves in Dominion notes, and by establishing a government monopoly of the note issue below four dollars, which was the amount of the old Canadian pound currency and the minimum allowed in the royal charter granted to the Bank of British North America.

On terminating the existing arrangement with the Bank of Montreal, the government itself, through the Treasury department, undertook the issue and redemption of Dominion notes. The chief basis for these notes was to be government securities. Incidentally to these changes, one uniform currency was to be adopted for the Dominion.

By a combination of firmness and diplomacy, Sir Francis Hincks managed to get a majority of the banking and other Interests in favour of his currency measure before introducing

it to parliament. The chief argument against the plan was the temptation it offered to needy governments to extend the government note issue, involving a series of forced loans, until it might become a monopoly of the entire note issue of the country.

The general act establishing the banking policy of the country became law in 1870 (33 Vict. cap. 11). The following year, however, this act was consolidated with previous acts relating to individual banks, etc., and resulted in the first general Bank Act of 1871, embodying the chief features of the Bank Act as we now have it. Under this act the minimum capital of a chartered bank was fixed at $500,000; this amount to be subscribed and at least $200,000 paid in before a bank could begin business under a certificate from the Treasury Board. The note issue was limited in the aggregate to the amount of the paid-up capital. Stockholders in the banks were subject to a double liability continuing to be valid when the shares were disposed of within a month of the suspension of specie payment. The division of profits in any form was limited to eight per cent per annum until the bank had a reserve fund equal to twenty per cent of its capital. Monthly returns under prescribed forms, only slightly less detailed than at present, were required to be sent to the government and to be published in the official *Gazette*. Every bank was required to receive its own notes at par, and in any payments due to it, but was required to redeem its notes in specie or Dominion notes only at the head office. Any bank might, however, redeem its notes at any other place named by it. The banks were to hold, as nearly as possible, fifty per cent, and never less than thirty per cent, of their reserve in Dominion notes. All bank charters granted or extended were to be subject to the conditions of this general act and no charters were to be extended beyond 1881. Most of the other special features covering the organization and winding-up of banks, the nature of the business to be submitted by discounts and loans, etc., were covered by the act.

Sir Francis Hincks considered that the most essential and valuable feature of the Canadian banking system was

not the free control of the note issue, but the freedom to establish branch banks throughout the country. A country such as Canada had then become, extending from the Atlantic to an indefinitely expanding West, he considered would increasingly depend upon banking facilities to assist in the internal distribution and export of its produce, and the transport and distribution of its manufactured supplies, whether produced in the country or imported from abroad. A system of banking, therefore, which permitted the same bank through its branches to undertake the complete financing of the distribution of goods from one end of the country to the other, would be of the greatest possible benefit. To encourage the formation and extension of large banks, with this object in view, Sir Francis Hincks had at first proposed a minimum of $1,000,000 of capital, with twenty per cent paid in before starting business. This, however, was strongly opposed by the friends of the smaller banks, and the limits prescribed in the act represented the utmost concession granted to his principle.

That part of the plan for the organization of the Dominion currency and banking system which related to the issue of Dominion notes appeared simply as an amendment to the act under which the Bank of Montreal acted as agent for the government in the issue and redemption of its notes. The amendments authorized the issue of Dominion notes to the extent of $5,000,000 on the security of specie and Dominion debentures, the latter not to exceed eighty per cent, to be held by the receiver-general or minister of Finance. This amount might be extended by order-in-council to an aggregate of $7,000,000. When any increase was made, the government should hold specie to the extent of one-fourth of the issue, but in no case less than fifteen per cent ; and when the reserve fell below one-fourth, it must be increased to that amount as soon as possible. Beyond $7,000,000 notes might be issued in exchange for specie, but all such specie must be held for the redemption of the extra notes. Branches of the receiver-general's office were authorized to be established at Montreal, Toronto, Halifax and St John for the issue and the redemption of the Dominion notes. A

monthly report was to be published in the *Canada Gazette* showing the amount of Dominion notes outstanding and of the specie and debentures held for their redemption.

During the following session of parliament, 1871, Sir Francis Hincks completed his scheme of currency and banking by establishing a uniform metallic currency through the Dominion and revising the system of Government Savings Banks. Although the monthly bank returns obtained under the new Bank Act of 1871 were much superior to those which preceded it, as revealed by the bank failures in the sixties, yet subsequent failures proved that there was still much to be desired in point of accuracy and suggested the need for a more trustworthy system of bank inspection, whether enforced by the shareholders or by the Dominion government.

Optimism and Speculation

During the years 1870-71, when the Canadian currency and banking system was being placed upon a sounder and more uniform basis, the general prosperity of the country was very marked. This induced a spirit of confidence in the future of the Dominion which rapidly passed into a spirit of unrestrained optimism and speculation. Railway building was undertaken on a large scale involving the rapid expenditure of many millions, promising much employment to labour and stimulating both trade and industry, which in turn involved a large and profitable business for the banks. Bank stock became a favourite form of investment, and ultimately of speculation. The rapid advancement in the value of bank stock naturally increased the supply in the shape of new and enlarged stock issues. The paid-up capital of the Canadian banks increased from $30,700,000 in 1869 to $58,458,000 in 1874, the greatest increase being from 1871-72, amounting to nearly $9,000,000. The speculation spread from bank shares to those of many other corporate enterprises, such as insurance, trust and loan companies, telegraph, street railway, gas and mining companies, etc. With increasing supplies of paper money, speculation was

unduly inflated. The inevitable reaction which ensued was not wholly due to Canadian conditions; but the Canadian condition was such that it naturally responded to the influences from without. There followed in Canada a long period of repentance and stagnation accompanied by a considerable volume of bankruptcy.

The year 1874 marked the turning-point in the speculative movement. Bank discounts rose to $144,927,000 while deposits were only $79,190,000. The large volume of discounts did not of course represent prosperity, but chiefly the inability of the public to liquidate their obligations at the banks. Of the sums involved in the failures between January 1875 and February 1876, which amounted to $26,900,000, not less than $16,200,000 were contributed by merchants and dealers. The banks, in spite of their favoured position and considerable margins, suffered severely, but their accumulated reserves saved most of them from suspension, while amalgamation and reconstruction covered the retreat of others.

In order to take advantage of the profitable dealings in gold and exchange after the close of the American War, the Bank of Montreal and the Bank of British North America established agencies of their own in New York, while several of the other banks had correspondents there, as had been the custom from the beginning of Canadian banking. From the first the Canadian banks had followed the policy of holding as little as possible of their funds in the shape of specie, and under ordinary conditions the business of the country did not require more than a small specie reserve. In times of crisis, however, when an extra supply of specie was called for, it was convenient to be able to draw upon New York, or through it upon London, for such specie as was required. The banks having regular dealing in specie and exchange with New York and London naturally enjoyed a special advantage during critical periods in Canadian credit. In 1870 the Bank of Montreal first opened an agency of its own in London.

In connection with its functions as the government bank of issue at the time of Confederation, it was necessary for

the Bank of Montreal to open branches in the Maritime Provinces, as the Bank of British North America had already established them in the various provinces before Confederation. This policy facilitated the introduction of a uniform currency throughout the Dominion.

In 1866 the Bank of Montreal withdrew much of its accommodation to merchants and produce dealers in Western Canada in order to invest it in specie and exchange dealings in New York. The Hon. William McMaster of Toronto, a director of the Bank of Montreal, and H. S. Strathey, manager of the Toronto branch of the bank, strongly protested against this policy. Their protests being of no avail, they became the leading spirits in the starting of a new bank in Toronto. This was the Canadian Bank of Commerce, for the establishment of which the unused charter of the Bank of Canada, granted in 1858, was revived and amended, the amendments including the change of name. William McMaster became the first president of the bank and Strathey its general manager. In 1869 the Bank of Commerce absorbed the Gore Bank, the oldest remaining bank in Upper Canada. The new bank developed very rapidly during the prosperous period of the early seventies. In 1874 its paid-up capital amounted to $6,000,000 with a reserve of $1,800,000, and it had already established an agency in New York. As it directed its attention chiefly to facilitating the purchase and transport of agricultural produce, it withstood better than most of the banks the trying period from 1875 to 1879.

Among the other banks which were established just before or during the boom of the early seventies, and which contributed to the bank expansion of the period, was the Merchants Bank, established in 1864, which took over the Commercial Bank at the time of its suspension in 1868. It suffered, however, from over-ambition in attempting to rival in a few years the Bank of Montreal. In consequence it was forced to undergo a severe pruning and change of management in the later seventies, after which it entered upon a less spectacular but much sounder career. Among the more stable and well managed of the new banks estab-

lished at this period were : the Bank of Toronto and the Dominion Bank, opened in 1869 ; the Bank of Hamilton, established in 1872 ; and the Imperial Bank, which came into operation in 1875 by amalgamation with the old Niagara District Bank. Another bank which began as the St Lawrence Bank in 1873, towards the close of the boom, and attempted a too rapid development with unfortunate results, was reorganized as the Standard Bank in 1876. Under new management it began a steady development after 1880. A more chequered career was run by the Royal Canadian Bank, established in 1865. It indulged in enterprising experiments resulting in apparent success but rapidly developing unfortunate consequences, first for the bank and then for the management, culminating in a suspension in 1869. The fresh start was made in the latter part of the same year. Apparent prosperity was once more attained during the early seventies, but its unstable condition was revealed with much loss in 1874 and 1875. Then came amalgamation with the old City Bank of Montreal, also temporarily embarrassed. The two were merged in the Consolidated Bank, which in turn was pursued by an evil fate, leading to final suspension in 1879. It was wound up with much loss to the shareholders but with little ultimate loss to the depositors, and practically none to the noteholders. The Federal Bank also dated from this period, having begun business in 1874. The normal expansion being very slow, the pace was forced somewhat, first in 1875 and afterwards in the period of 1879-84. The result was of the usual character. Losses on unsound business ripened into disaster, followed by suspension and ultimate bankruptcy. Among the banks established in the Province of Quebec during the period, La Banque Jacques Cartier was the oldest. Chartered in 1860, it gave evidence of prosperity for some years ; and, though difficulties appeared in 1868, the boom restored confidence and apparent success. The reaction of 1874-75, however, revealed difficulties once more, ending in suspension. The capital stock was reduced fifty per cent and preferred stock issued when the bank resumed. It had, however, a hard struggle, and in 1878 the stock was

again cut in two, thus reducing the first capital of $2,000,000 to $500,000. On this basis it managed to maintain itself for a considerable time. La Banque Nationale was established in 1859. As it was largely interested in the lumber trade, its fortunes fluctuated with it. After several periods of prosperity, followed by others of serious loss, the most severe of which occurred during the crisis of 1885, its capital was reduced from $2,000,000 to $1,200,000. Since that time its capital has been restored to $2,000,000, supported by a considerable reserve fund. Another Quebec bank of this period was the Union Bank, chartered in 1865. As it also was interested in lumber, its fortunes varied with that trade. Its troubles culminated in 1885, when its capital was reduced and its reserve fund lost. Since then it has again built up its capital to $5,000,000 and a reserve fund of over $3,000,000. One of the most badly managed of Canadian banks was the Mechanics Bank of Montreal, chartered in 1865. It adopted the policy of being purely a city bank without branches and without note issue. After the Bank Act of 1871, however, it issued notes and later established a few branches. It did a very precarious business and was forced to suspend in 1875. After some arrangements with its creditors it reopened, but in 1879 suspended again. It was ultimately wound up with much loss to its creditors as well as to its shareholders. Another Montreal bank making a fair beginning but a sorry ending was the Metropolitan Bank, chartered in 1871. It started with a flourish of trumpets as dividing the government favours with the Bank of Montreal. It dealt largely in loans on the security of bank stock, a highly speculative business during the boom period. All went merrily until the reaction in 1874-75, when its financial house of cards came tumbling down. Various efforts were made to redeem the situation but in vain, and in 1877 liquidators were appointed to wind it up.

Commercial Reaction and Financial Depression

The commercial reaction and financial depression which followed the highly speculative period of the early seventies

resulted in sifting the wheat from the chaff among the Canadian banks, but produced an attitude of misgiving upon the part of the public towards the banking system. This in turn more or less perplexed the government in its revision of the Bank Act in 1881. The prevailing depression led to the propounding of numerous remedies of a more or less sweeping character, and no panaceas are quite so sweeping in their range as those concerned with money. One of these, the Agricultural Banking System, brought before parliament in 1878, was a scheme for collecting all the fluid capital of the country into county banks, from which it was to be transferred to the government at three per cent interest, to be employed in public works. The government was to replace this fund from the banks with an equivalent amount in paper money, to be employed as loans for developing the agricultural resources of the country. The advocates of this plan were prepared to guarantee through it the return of prosperity to the country at large. In point of fact it made many disciples, but they did not manage to get it through parliament. At the same time important missionary work was accomplished, and the following session produced not only a national tariff policy but a national currency policy, both with the same object in view—to compel the return of prosperity. Under the National Currency policy the government was urged to resume completely the right and power to issue paper money, and to use this power in a very liberal manner. This was a simple matter, for the government notes were redeemable, not in gold, but in land or Dominion securities, and the Dominion could furnish either in almost unlimited quantities. The stock arguments in favour of a virtually incontrovertible paper currency were industriously employed in support of this scheme. Its simplicity, cheapness, and unlimited efficiency appealed strongly to many minds, and it had great vogue for a time.

Apart from these schemes, the practical question before the country at this time involved the security of the note issue of the banks, and gave added interest to questions as to the indefinite extension of the existing right of the government to issue paper money. The notes of certain suspended

banks had not been very promptly redeemed and in the meantime had passed to a considerable discount, involving loss and inconvenience to the holders. Moreover, the lack of any definite range in their circulation at par afforded a further inconvenience, becoming more acute as the internal trade and intercourse of the Dominion enlarged. The bankers, appreciating the force of the arguments in favour of an exclusive government note issue, proposed that the notes of the banks should be made a first charge on their assets. This was accepted and became a leading feature of the new Bank Act.

Still, the question of the indefinite expansion of the government note issue remained to be met. It was not easy to meet, inasmuch as during the past decade the limits set by Sir Francis Hincks had been extended on several occasions, and then stood at $12,000,000, while no disastrous results had followed. In 1880 Sir Leonard Tilley, the minister of Finance, proposed a further extension to $20,000,000, to be supported by a reserve of gold and guaranteed securities to the extent of twenty-five per cent, fifteen per cent to be in gold. The remaining three-quarters were to be supported by ordinary Dominion securities. When asked where he would obtain gold in case of a sudden demand upon the treasury for the redemption of its notes, the minister of Finance replied that the government had considerable balances on deposit with the banks and the gold would be obtained by drawing upon the banks. But the banks, when asked where they would obtain gold, replied that they could return their holdings of Dominion notes and obtain the gold from the government treasury. Under the circumstances the attitude of the government naturally met with disfavour on the part of the banks and the advocates of a trustworthy currency. But it was heartily applauded by the 'National Currency' party, whose only objection was that it did not go far enough in the very proper direction which it had taken. Indeed William Wallace, M.P., chief advocate of an irredeemable paper currency, maintained that the fifteen per cent of gold was, on the one hand, a quite inadequate reserve and thus

a dangerous delusion, and, on the other, that it was wholly unnecessary. The government, he claimed, would have been in a far safer position had it thrown overboard the gold basis delusion and come out frankly for an irredeemable currency. This would deceive no one and run no risks of creating a panic over the inability of the government to redeem its notes after having engaged to do so.

The government carried its point with reference to the extension of the Dominion notes and proceeded to take up the amendments to the Bank Act. Apart from the making of the note issue a first charge upon the assets of the banks, these were not very important. Other amendments related to such matters as giving a person receiving payments from a bank the right to ask for dominion notes of one and two dollar denominations to the extent of fifty dollars in any one payment. The raising of the minimum denomination of a bank note from four dollars to five dollars, and increasing the proportion of cash reserves held by the banks in Dominion notes from thirty-three and a third to forty per cent, was proposed. There was also an amendment of the monthly returns required from the banks, in order to show more clearly their financial position, more particularly with reference to dealings with each other, and to distinguish their holdings of municipal, provincial and Dominion securities.

A Decade of General Stagnation

The decade between 1880 and 1890 proved to be one of very general stagnation, except for a temporary land boom in Manitoba which gave to the West an evil reputation for the following ten years. Some of the banks which were involved in this speculation suffered severely, but the failures most damaging to the general credit of Canadian banking took place in the older provinces. One of the most notable failures was that of the Exchange Bank of Montreal, which collapsed in 1883. The noteholders were ultimately paid in full, but the depositors and other creditors lost fully one-third of their claims. The Bank of London, established in

1883, ran a rapid and reckless course and was wound up in 1887, but without much loss to the creditors. The Central Bank was also chartered in 1883 and closed in 1887 with considerable loss to the shareholders. The Federal Bank, already referred to as following unsound banking practices in the previous decade, got into further difficulties through speculative dealings in Manitoba and elsewhere ; and, after further efforts to reorganize, was wound up in 1880 with the assistance of some of the other banks and without special losses to the creditors.

In the Maritime Provinces a notable failure was that of the Maritime Bank. It was established at St John, New Brunswick, shortly after Confederation. Speculative and irresponsible management accounted for the course which brought it into difficulties in 1883. Reorganized in 1884, it managed to continue business on a reduced capital until 1887, when it was forced to close its doors. Little more than ten per cent of their claims was realized by the general creditors. The Bank of Pictou, in Nova Scotia, also failed in the fateful year 1887, but, for others than the stockholders, the losses were not very heavy.

This list of bank failures towards the end of the decade of 1880-90 produced the usual misgivings with reference to the safety and efficiency of the Canadian banking system. The steady though slow growth of domestic trade throughout the Dominion led to complaints as to the inconvenience and loss resulting from many bank notes not being acceptable at par in all parts of the country. The note issue becoming a first charge upon the assets of the banks ensured its ultimate redemption, but did not prevent great inconvenience and considerable loss while the process of liquidation was in progress. These and other practical points were pressed for consideration in connection with the revision of the Bank Act in 1890. As already noticed, from the time of the first bank act the Bank of Montreal and the Bank of British North America had maintained in all the provinces offices at which their notes could be either issued or redeemed. A number of other banks made similar arrangements. Hence one of the proposed amendments ultimately adopted was

that requiring all the chartered banks to make arrangements for the acceptance at par or redemption of their notes in all parts of the country. With reference to ensuring the prompt redemption of the notes of a suspended or wound-up bank, the American device of a redemption fund contributed by all the banks in proportion to their outstanding note issue and to be held by the government, was proposed and accepted. As provided for in the act, it was known as the 'Bank Circulation Redemption Fund.'

Complaint as to inadequate specie reserves held by the banks was once more to the front. George E. Foster, the minister of Finance, had proposed that the banks should be required to hold a minimum reserve. But the banks were able, as usual, to demonstrate the futility of enforcing a minimum reserve under the fluctuating conditions of the note issue and the deposits and discounts of Canadian banks. Their arguments prevailed, and the banks once more escaped a plain obligation, simply because it was found inconvenient to enforce it. Another proposal, which has been growing in importance since that time, was the providing of an independent audit of the affairs of the banks. The audit was to be undertaken by competent parties appointed by the shareholders, the reports of the auditors to be presented to the shareholders at the annual meetings, and to the minister of Finance. Although the revelations made after every bank failure indicated the necessity for some independent audit of the head office at least, yet the argument that it would be impossible for an auditor to pass upon every discount granted by a bank served to prevent any form of audit of the chief transactions of the bank.

Additional safeguards were adopted in connection with the issue of the certificate of the Treasury Board authorizing new banks to begin business. Facilities were granted enabling the banks to aid to a greater extent than formerly in the production and distribution of goods, but advances to the ordinary farmer or agriculturist on his growing crops were not commended. In virtue of the assistance afforded and to ensure the return of the advances made, the banks were permitted to acquire preferred claims upon goods when

sold or delivered. Altogether the revision of 1890 was much the most thorough-going which the Bank Act has ever received.

The Canadian Bankers' Association

At the next decennial revision of the Bank Act in 1900 undoubtedly the most important and far-reaching of the new features introduced was the official recognition of the Canadian Bankers' Association as an important instrument for the organization and control of banking functions. This association had been formed in 1892 and had already proved of much value to the banks which constituted its members, and through them to the public. With a view to enabling it to act in a legal capacity, both on its own authority and in connection with the Dominion Treasury Board, the association was incorporated in 1900. In its more public capacity it was authorized to exercise, through its executive council, a general supervision over clearing houses, under rules and regulations to be approved by the Treasury Board. It was also empowered, through its executive council, to appoint a curator to assume supervision of the affairs of a suspended bank, with a view to protecting the interests of the creditors and stockholders. In case such a bank could not resume operations, the court might appoint the curator a liquidator to wind up its affairs. This arrangement has proved an admirable one. The contrast between the efficiency and economy resulting from a skilled banker acting as liquidator and the operations of certain other officials appointed in that capacity has been very marked in a number of concrete cases. Moreover, the control exercised by the curator immediately after the suspension of a bank has been of the most beneficial character and has effectively guarded against such fraudulent practices as the conversion, after suspension, of the claims of depositors into those of noteholders.

The association also exercises a certain supervision over the printing and distribution of the notes to the several banks and requires returns from the various banks as to the destruction of cancelled notes. The possibilities of extending

the powers and functions of the Bankers' Association are numerous. Its close relationship with the actual practices of the banks, and its facilities for obtaining information without unnecessary publicity, indicate the potential efficiency of its executive council as a regulator of questionable practices in the case of individual banks. The provision of an appeal to the Treasury Board on the part of individual or smaller banks against alleged arbitrary action on the part of controlling interests in the association should amply safeguard all interests.

Twentieth-century Expansion

During practically the whole period from 1900 to 1913 Canada has been enjoying an economic development far transcending in steady and rapid expansion the most prosperous periods of her previous history, all of which were of very limited duration. While of necessity the expansion of the banking function has kept pace with the other lines of development and very materially facilitated the introduction, distribution and practical application of immense funds of foreign capital, yet the number of banks has been actually diminished. In former periods of prosperity the number of banks steadily increased. In recent years, however, they have been reduced in number from thirty-six in 1900 to twenty-five in the beginning of 1913. It is true that quite a number of new banks were projected and some of them actually brought into existence ; but a number of them fell by the way, and others, together with some of the older institutions, seeing that the strength of the competition among the banks was too great for them, sought refuge in more or less profitable amalgamations with older or more vigorous banks. During the period in question the paid-up capital of the banks has increased but moderately, standing at $67,087,000 in 1900 and $114,881,000 at the close of 1912. The reserve fund, however, has more than trebled, increasing from $34,501,000 in 1900 to $106,840,000 in 1912. The notes in circulation have also more than doubled. But the most essential and representative features of modern

banking, the deposits and discounts, have increased to a phenomenal extent. The ordinary deposits of the general public on time and demand amounted to $297,915,000 in 1900, but had increased to $1,012,418,000 in 1912, an increase of nearly three and a half times. The loans to the general public stood at $275,646,000 in 1900, and had increased to $881,231,000 in 1912, being an increase of somewhat over threefold. The significance of these figures as an indication of the essential functions of the Canadian banks in the modern economic life of Canada will be referred to in the closing section of this sketch, but they are significant also of the expansion of the banking system and of the volume of business which it is called upon to perform.

That the banks have followed up the development of the country by the establishment of new branches wherever possible is sufficiently evidenced by the fact that the total number of branch banks in 1900 was 708, whereas on February 28, 1913, the number had increased to 2847. Although the greatest number of branches have been opened in Ontario, yet the largest proportional increase has been in the North-West Provinces. A detailed study of the banks with reference to the opening of new branches, the location of these, and the banking facilities offered in small places where the existing business cannot possibly pay the expenses of the new branches for some considerable time, all testify to the very vital and effective competition which exists among the banks in their efforts to meet the requirements of the country. In fact, if any criticism of this feature can be offered, it is the tendency towards over-competition, as shown by an examination of the details of bank amalgamation and bank failures which have taken place since 1900. It is quite obvious that the sharpness of competition among the banks led in some cases to the introduction of methods of increasing business and exhibiting outward progress which were inconsistent with sound banking, and laid the foundations for much of the subsequent troubles, which led to still more questionable transactions and ultimate collapse.

Recent Disastrous Bank Failures

Most of the banks which have failed since 1896 were comparatively small banks which were very badly, and even fraudulently, conducted by the central management. Among these were the Banque Ville Marie, Banque de St Jean, Bank of Yarmouth and Banque de St Hyacinthe.

But a much more important failure which threatened more widespread criticism of the banking system of Canada was that of the Ontario Bank, whose history has been already traced and which was for many years a very creditable institution. The unfortunate effects of this failure in 1906 would have been greatly increased had not the larger banks, and especially the Bank of Montreal, come to the partial rescue of the institution and allayed the fears of its creditors.

One of the newer banks, whose erratic course and inevitable collapse were largely due to the stringency of bank competition, was the Sovereign Bank, established in 1901. In its efforts to exhibit a prosperous spirit and rapid growth it accepted business of a very questionable character, with the inevitable result in such cases. The attempts to restore its credit under a new management, and with the indulgent assistance of the other banks, were beyond criticism; but, in the face of the effective competition of the other banks, it was found impossible for it to live down its past record. Once more, in 1908, to avoid injury to the general credit of the banking system, the leading banks had to take its affairs in hand. It was eventually wound up with as little disturbance as possible to the general credit.

The collapse of the Farmers Bank, although not of special importance to the country as a whole, brought disaster to many innocent shareholders who should never have assumed the responsibility of holding bank stock. It was subject also to unscrupulous management from the beginning, and suffered from the too effective competition of the older banks for the more legitimate business of the country.

These recent bank failures have once more raised, in pressing form, the question of external bank inspection. It

is realized that there is little danger of fraudulent practices on the part of the officers of a bank in charge of its various branches. Practically all of the recent bank failures have proved to be due to reckless and fraudulent transactions in connection with the head offices, for which the central managements alone were responsible. Most of these transactions could have been easily detected by an expert banker familiar with the ordinary operations of a Canadian bank, especially in its head office. Doubtless an external audit cannot take the place of a constant and detailed examination of the various branches, especially among the larger banks; but an adequate inspection of the head office with power, where necessary, to look into the working of the branches would deter the management from embarking on lines of investment and extensions of credit which were unwarranted, or from improper manipulation of funds through the head office.

In the banking business above all others an ounce of prevention is worth a pound of cure. Once a bank has been permitted to embark upon a questionable line of business it is impossible for a special audit, the report of which is necessarily made public, to accomplish anything but the destruction of the bank. When doubt is once cast upon the integrity of the bank's management and credit, its deposits are certain to melt away like snow in June; and the institution, unable to liquidate rapidly, is forced to suspend, with little prospect of opening again. A more or less confidential supervision of all the banks by acknowledged experts would check unwise practices in their infancy, when a bank has ample opportunity for correcting its mistakes, and directing its business in the future into proper channels. An audit on the part of the shareholders, if constant and efficient, might indeed secure this purpose; but most of the bank failures have occurred because the shareholders were originally indifferent as to the employment of the checks which they already possessed, and there is little guarantee that, in the very cases where supervision is most necessary, the shareholders will be especially vigilant. An inspection under the authority of the Bankers' Association

would seem to promise much more certain and efficient results, with only such publicity as might be granted at the discretion of the minister of Finance, and without provoking the fear of an employment of the powers of inspection for coercive purposes. Under the present system of Canadian banking each individual bank holds the credit of the banks in general so largely in its keeping that it is only a matter of common prudence to place in the hands of a responsible organization, such as the Bankers' Association, the power of supervision with a view to safeguarding at once the credit of Canadian banking and that of the country in general.

The Currency Acts

Since 1871 there has been practically no change in the system of metallic currency in the country. The decimal currency in denominations of dollars, cents, and mills, introduced into Canada before Confederation, was made applicable to the whole Dominion by the Currency Act of 1871, and extended to British Columbia and Prince Edward Island in 1881. The standard of value in the Canadian currency was till 1910 the British gold sovereign. The Canadian dollar was and is related to it in the proportion of $\$4.86\frac{2}{3}$ to the sovereign. All public accounts were (and are to be) kept in dollars and cents, and all private accounts were (and are to be) understood to be in that currency unless otherwise clearly specified. Provision is made in the Currency Act of 1910 for the issue of Canadian gold coins of the same standard of weight and fineness as the gold coins of the United States. No gold coinage was issued before the establishment of the Canadian branch of the Royal Mint in 1908. The first gold coins struck in Canada were sovereigns (December 1908), the dies being the same as for those struck in Britain, with the slight variation that a small 'C' was introduced over the date on the reverse, showing that the coins bearing it were minted in Canada. In May 1912 the first Canadian gold coins were struck, being ten-dollar and five-dollar gold pieces. Nearly a million and a half dollars' worth of such pieces had been struck up to the close of

1912.[1] So long as gold is little employed in the country as currency, there is likely to be but a limited demand for the Canadian gold coinage. As the mining of gold goes on it may be found more convenient to have it minted in Canada rather than at a foreign mint. Minting, however, is not necessary to the efficient use of gold in international exchange.

Silver coins are legal tender to the extent of ten dollars, and bronze coins to the extent of twenty-five cents, in any one payment. Until 1908 the Canadian silver and copper coinage were issued from the Royal Mint in London, under an agreement with the Canadian government as to the rate at which they should be supplied. As they were issued in Canada at their face value, being nearly double their bullion value, the profit to the Canadian government was very considerable. In 1908, however, there was opened in Ottawa a branch of the Royal Mint. Under an arrangement with the British government the Canadian government furnished the necessary buildings and equipment and provided a sum not exceeding $75,000, since increased to $110,000, per annum for the payment of the salaries and expenses connected with the administration of the Ottawa branch. The deputy master of the Mint, the various members of the staff, and the workmen connected with the branch are appointed by the British Treasury and responsible to it, but paid by the Canadian government, to which falls the entire profit of the Mint.

It is a curious fact that although provision is made for the issue of Canadian silver and bronze currency through the assistant receivers-general to an indefinite extent, while their legal tender is very narrowly restricted, yet the government, which alone has the right to issue them, has made no provision for their redemption except as worn coins. There have been periods of reaction in trade when the accumulation of silver and bronze coins in the vaults of the banks became a matter of serious inconvenience. Of late years the steady expansion of population and trade has resulted in the ready absorption of all the coinage which can be furnished by the

[1] By the act of 1910 as by that of 1871, half-eagles, eagles, and double-eagles of the United States are legal tender in Canada.

Mint. A time will return, however, when inconvenience resulting from an over-accumulation of silver and bronze coins, either in circulation or in the hands of the banks, may call for such an amendment of the law as will require the government to redeem in gold or Dominion notes its issue of silver and bronze coinage.

The Functions of the Banking System

Regarded as an actual working system discharging certain very vital services for the country at large, the Canadian banking system presents certain important phases which are not of a purely historical character. At the same time the historical development of the system throws much light upon the essential nature of the services at present rendered.

The chief functions discharged by the present system of Canadian banks may be summarized under three heads :

1. The supplying, in great part, of the paper currency which constitutes the circulating medium for smaller exchanges, and for the immediate discharge of pecuniary obligations as between individuals, without the use of instruments of exchange, such as cheques or drafts, involving the credit of either or both parties to the transactions.

2. The furnishing of a mechanism of exchange greatly economizing the use of metallic and paper currency, through the employment of cheques, drafts and bills of exchange for the larger exchanges involving time, distance or individual credit.

3. The furnishing of a more or less elaborate and widely extending mechanism by which, through an effectively organized, far-reaching and highly responsible system of credit, both the credit of the banks and the unemployed balances of cash or credits left on deposit with the banks by individuals and corporations are made available for immediate use. The banking system, through the individual banks and their responsible officers, thus constitutes a common meeting ground and centre for a great mass of individual credits and obligations. The banker not only grants loans on his own credit, but is constituted the temporary guardian

at once of the loans which he grants, and of the surplus or temporarily unused funds of thousands of individuals or corporations. In turn the banker undertakes to trust with these funds thousands of other individuals and corporations, in immediate need of them, to carry on the production and exchange of services and goods.

Some explanatory discussion of each of these three functions may serve to bring out more clearly the essential nature of Canadian banking. As regards the supply of paper currency, the Canadian banks, through their note issue, furnish the most important feature in the current medium of exchange. The issue is at once inexpensive to maintain and sufficiently elastic in its supply to meet the changing needs of the seasons. In the validity of its credit it strikes a happy medium between a currency whose credit is in constant doubt, and one which is so absolutely guaranteed, independently of the bank in whose name it is issued, that it is as good as gold and therefore liable to be withdrawn from circulation and hoarded in times of distress, thus depriving the country of its circulating medium and greatly aggravating the very evils of a crisis which the financial interests are most anxious to escape. The most valuable characteristics of the Canadian bank notes are due to the fact that they are issued on the credit of the individual banks, secured by their assets on which they are a first charge. Possible uncertainty as to the credit of one or two individual banks is removed through the security furnished by the joint redemption fund, contributed by all the banks in proportion to the volume of their note issue, and to be held by the government. Should a bank suspend or fail and be unable to redeem its note issue as presented, its notes would be redeemed out of this fund. At the same time, as the fund represents only five per cent on the total note issue, it does not furnish a guarantee of the issues of all the banks, but only of a few of the weaker ones, leaving the general credit of the note issue dependent upon the credit and assets of the banks. Only, therefore, if a general collapse of the banks is threatened, and their creditors are seeking to convert their deposits into preferred claims, will there be

a tendency to withdraw bank notes from the banks or from circulation, and hoard them as the most valuable form of bank credit. In the United States, where the bank notes are guaranteed by government securities held by the National Treasury, they are independent of the credit or general assets of the banks, and are therefore virtually as secure as specie and are hoarded for the same reasons.

There is just one essential defect in the system of Canadian bank note currency, and that is that on its normal basis it has already proved inadequate in amount to meet the currency needs of the country at certain seasons of the year. Normally the bank notes are limited in their issue to the amount of the paid-up capital of the banks, but so long as the discounting and deposit business of the banks is not limited by their paid-up capital, and so long as it is the fashion of the banks to designate one-half of their capital as a reserve fund, it is not likely that the paid-up capital will be adequate as a basis for the note issue of the country. In order to meet the deficiency of note circulation at certain seasons of the year, the Bank Act was amended, in 1908, to permit the banks during the crop-moving period from the beginning of September to the end of February to issue notes in excess of their paid-up capital to the extent of fifteen per cent of their combined paid-up capital and reserve fund. But the banks are required to pay on this extra issue a tax, which is intended to render it unprofitable to maintain the extra circulation longer than is absolutely necessary. The ' emergency circulation ' is at best but a temporary expedient, and unless the capital of the banks is increased some more permanent provision will be required to meet the future needs of the country.

The second important function of the Canadian banks is the furnishing of a more efficient mechanism of exchange than ordinary metallic and paper currency, through the use of cheques, drafts and bills of exchange. Greatly economizing the use of bank notes and Dominion notes and specie, this system avoids the risks, expense and trouble incident to storing, transporting, examining, and counting the notes or specie, more particularly in connection with

large payments. In the earlier days of the Canadian banks, as we have seen, in granting loans the banks virtually lent their notes and capital. When a loan or discount was arranged, it was immediately drawn out in the shape of notes or metallic currency in order to make the required payments. As late as 1840 the note issue of the banks constituted more than one-half of their liabilities, whereas at present the note issue constitutes only about one-eleventh of the liabilities of the banks. Under modern conditions the customers of the banks, instead of withdrawing their loans in specie or notes, leave them on deposit with the banks, and draw cheques against the deposits as required. Those also to whom the payments are made utilize the banks as custodians of their money, with the consequence that, instead of loans, when arranged, resulting in the withdrawal of currency, they result merely in the transference of the credits granted by the banks from one name to another in the bankers' books. The fact that the person making a payment and the person receiving it keep their accounts in different banks, or in different cities, alters neither the principle nor the practice, for the banks adjust their balances as between each other through the clearing houses. It follows that the deposit and cheque system is simply a much more economic, safe and efficient form of making payments than that which formerly prevailed. The fact that the Canadian banks are limited in number, but furnished with numerous branches, greatly adds to the economy and efficiency of the system.

The facilities for effecting exchanges and making payments by means of cheques and drafts is intimately associated with the third chief function of the banks, namely, the employment of their own and their customers' credits in furnishing loans to other customers, who are as a rule either alternately or simultaneously debtors and creditors of the banks in virtue of the loans when secured immediately becoming additional deposits. This modern combination results in affording the maximum facilities for assisting business and trade where the assets are fairly fluid and where the returns for the loans are reasonably certain to come in promptly.

The popular conception as to the deposits of the public with the Canadian banks is that this volume of deposits represents the savings of the people of Canada over and above their requirements for their personal needs or the immediate conduct of their business. These savings being placed with the banks are supposed to furnish them with the means for lending capital to others. In this way the available capital of the banks is supposed to be limited to their own original capital, including the reserve funds, on the one hand, and the supply of the capital furnished by the savings of the public deposited with them, on the other. On this conception a tight money market means that the banks have come to the end of their supply of capital and deposits. This conception is evidently due to the observation that, when a person receives in return for his services or the sale of goods or property more than he requires for his immediate needs or investments, he leaves the balance on deposit with the bank until he determines upon some other form of investment for it. This idea is a very natural one and, as respects individual depositors, expresses a certain truth ; but it represents a quite erroneous conception of the relation of deposits and discounts in the banking business of the country. As a matter of fact, instead of the deposits of the public with the banks furnishing the necessary basis for bank loans, the real sequence is quite the opposite. The loans are the basis and condition of the deposits, an increase of deposits being almost entirely limited by an increase in the loans. The only deposits which may be increased without antecedent loans are those made in specie, or its equivalent in Dominion notes and foreign exchange. But the small amount of gold actually held by the Canadian banks either as specie or Dominion notes will indicate how little of the deposits are received in this shape. The bank returns for March 1913 show that the banks held in specie $36,000,000 and in Dominion notes almost $95,000,000, while the deposits and loans amounted to nearly a thousand millions each. That the capital of the banks does not furnish any real fund for current loans is obvious enough from the fact that more than the whole capital of the banks,

including the rest or reserve fund, is represented in specie, Dominion notes and call loans in New York. The thousand millions of loans, therefore, making possible the thousand millions of deposits, represent simply the credit of the banks advanced to the general public, not on the security of the capital of the banks, which is only a marginal guarantee of good faith and responsible management, but on the security of the property and business conducted by the persons to whom the loans are granted.

What, then, is the essential nature of the relation of the deposits to loans and why are the banks so anxious to have deposits made with them, if their loans do not arise from these ? The reason is that, if the loans when granted are immediately converted into deposits and remain with the banks, or if when they are drawn against by cheques these cheques are deposited and the credit still remains with the banks, then the banks are not called upon to furnish specie or Dominion notes for the credits which they have granted, and may therefore continue to negotiate further loans to an indefinite extent. Again, it may be asked, what is the use of a loan if it is never drawn out of the banks ? Much every way. To make use of a loan does not require that it shall be withdrawn from the banks. A merchant of good credit negotiates a loan with a bank for $10,000 with which to purchase grain. Instead of drawing out the $10,000, he leaves the sum on deposit to be drawn against by cheques as he buys the grain. The day following the granting of the loan the bank books show an increase of $10,000 in loans and an increase of $10,000 in deposits. But the savings of the people have not increased by $10,000 overnight, nor have the banks $10,000 less money on hand. In the course of a few days the merchant buys a thousand dollars' worth of grain, which he pays for by cheque. When the cheque is cashed his deposits sink to $9000, but the cheque is placed to the credit of the person selling the grain either in the same or another bank, and the total deposits of the banks remain unaltered. The farmer who sold the grain pays for implements, household supplies, etc., with $800 of his deposits and leaves $200 on permanent deposit for a few years with

the idea of acquiring sufficient to pay off a mortgage, or make a payment on more land. The $800 paid through various cheques, or even in notes and fractional currency, goes into the respective deposit accounts in the banks, while the $200 remains as a time deposit in the name of the farmer. From the point of view of the farmer the $200 constitutes a saving from his annual income; but from the national point of view it is no actual addition to the wealth of the country, otherwise the wealth of the country would be doubled by the simple fact of farmers selling their grain. The day before he sells it the country has a thousand dollars' worth of grain, the day after he sells it and he puts his cheque in the bank, the country has a thousand dollars' worth of grain, but no longer in the possession of the farmer, and a thousand dollars of capital to the credit of the farmer in a bank. But the fact that the farmer decided to hold the $200 of his deposit for a few years as a saving does not in the slightest improve its quality from the point of view of the country. The fact is that the thousand-dollar cheque which he received and deposited does not represent his grain, but arose simply from the loan negotiated with the bank by the man who wished to buy it, and the farmer was willing to exchange his grain for the bank credit, and it is a bank credit alone which he now holds. The situation is precisely the same as if the farmer had accepted for his grain bank notes or the promissory note of any individual. These may be exchanged for various forms of concrete property, but in themselves they are simply credits · and so is the bank deposit.

It thus appears that a loan once created and deposited may exchange any quantity of goods without leaving the books of the banks in the shape of deposits, and that, even when part of a deposit may be drawn out in the shape of notes and fractional currency, as for a payment of wages, it soon returns to the form of bank deposits through the daily deposits of tradesmen and others.

It is evident, then, that an increase in bank loans and deposits does not represent the savings of the people of Canada, nor would a decrease in the deposits indicate the

loss or destruction of their savings to that extent. The volume of discounts and deposits is simply an index of the volume of business being done at the time. It gives no clue, however, as to the profitable or unprofitable character of that business. A decrease in the volume of discounts and deposits simply indicates that loans are being cancelled when they fall due by drawing cheques against deposits to the same amount. Thus deposits and discounts fall together when loans are cancelled, just as they rise together when loans are created.

The last question to be considered may be stated thus. Why should the banks recognize any limits in granting loans, since they are not limited by the deposits previously made ? The reason is that, although, as we have seen, under normal conditions the deposits with the banks are not drawn out but simply pass from bank to bank as the credit for them is transferred from one person or corporation to another, yet the very foundation and touchstone of all sound bank credit is that, whenever necessary, the banks stand ready to pay out these deposits not only in the shape of notes and fractional currency, which automatically return again, but in the shape of gold or Dominion notes, or bills of exchange on foreign countries. It is to meet such demands that the banks keep on hand a certain reserve of gold or Dominion notes. In the course of their ordinary business in prosperous periods the banks find that on the whole they receive as large amounts in the shape of specie, Dominion notes and foreign bills of exchange as they are required to furnish in these forms. Under these conditions, and finding their deposits keeping pace with their discounts, the banks may safely enlarge their discounts indefinitely ; but, when the banks find their deposits falling below their loans, owing to the withdrawal of specie and Dominion notes or the call for to outward exchange exceeding the incoming of similar funds, they recognize the conditions as a warning to curtail their loans, thereby curtailing the credits in circulation or on deposit, which give the public a command on the specie reserves of the banks. As loans are continually falling due and being paid, the banks automatically diminish their

credits by simply curtailing new loans. That is the meaning of tight money. It is not that the deposits are used up or that money is actually less in amount than before, but simply that the banks feel the necessity of exercising caution in their loans by confining their advances to the most secure and reliable forms of trade. The banks thus discharge a very important function in putting the brakes on the train of general business when the movement is too rapid or when external financial conditions, upon which the progress of the country depends, are in a state of uncertainty. Upon the wisdom and foresight manifested by the banks in the exercise of their regulative function the national financial safety unquestionably depends.

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